QUi.

introduction

1

"The best part of working with this team was the tolerance and empathy. My favorite moments were the ones that made us friends, like when we ordered pizzas, or watched a movie."

- (Annie) Yaan Wei
  Industrial Design

Eline Muijters
Industrial Design Engineering
Netherlands
"I'm fun, that's a fact"

Morgan Ricard
Graphic Design & Advertising
United States
"I've got a mean green thumb"

(Annie) Yaan Wei
Industrial Design
China
"I constantly wish I were gay,
but I'm straight"

Meet "The Gal Pals"

Product Service System Design | Innovation Studio

Gal Pal (noun)
informal

(1) : a girl/woman who is a
friend
(2) : a team in the polimi
Innovation Studio

MariaStella Russo
Interior Design
Italy
"I keep a list of words and
phrases which I think sound
aesthetically pleasing"

(Saba) Fatemeh
Soltanshahi
Industrial Design
Iran
"I love food and cats"

Introduction

The Process Which Lead to Qui.

Abstract

During their first semester of the Product Service Systems Design Master's at Politecnico di Milano, students participate in a course called Innovation Studio which aims to introduce the complexity of a product service system project by exploring the process beginning with a "concept" and following through to a final "product." The Innovation Studio encourages students to stretch their skills, and collaborate in multicultural/multidisciplinary teams where each person acts as a fundamental component with specialized capabilities. This year's Innovation Studio expands upon the work done in the previous years with the topic "UNCERTAIN TIMES," focused on how to design product service system solutions for a very uncertain and unpredictable future, using the imagination and design research to create products and services which will exist in the daily lives of average people 15 years in the future.

Our given scenario is set in 2037, a future of higher education systems that are decentralized, digital, and revolve around local participation in global circumstances. Teams are encouraged to consider changes in environmental, technological, political, and social contexts. The intended final result of this course is a product service system consisting of a physical product (model/prototype/final object) and an accompanying service. Final objects must fit within a 2X2X2m cube, and all teams are required to use plywood as their primary material. Project development and evaluation is broken into three modules. Module 01 concerns Concept Generation; Module 02 is all about Design Research, and Module 03 brings all efforts together in the creation of a Prototype.

Early on, our team narrowed in on the significance of internships in the higher education experience. We realized how many barriers to entry exist for achieving a student internship (proximity to relevant work, uncertain payment, the prevalence of nepotism, etc.) and how significant of an advantage in employability is gained by those who have access to these experiences. We initially explored three directions under the umbrella of higher education and internships: (1) remote internships in the small living spaces of university students (2) managing stress-levels for those who are juggling student life and their first career exposure (3) specialized tech to support a possible future where VR internship simulations become more prominent than exclusive in-person ones. On the same day that we presented our initial three directions, Facebook announced Meta and their shifted focus towards the metaverse, and suddenly we saw a future where remote AR internships could solve many flaws in the current traditional internship systems. Our team's new scenario within the prompt of higher education in 2037 is as follows: In the future, design internships for university students will exist in hybrid offices where full-time employees may work in presence or may work remotely through the adaption of Augmented Reality (AR) in the professional world, but all interns will be given equal access to work opportunities as they will most commonly be a remote role facilitated through the metaverse. This increased accessibility opens opportunities to more students, and could allow internships to be conducted throughout the duration of higher education, instead of being left for the end. We collected case studies, research papers, and conducted our own interviews until we became experts on all topics relating to our scenario. We studied intern demographics, existing internship models, benefits and barriers to internships, what is learned through internships and how, ludic learning, emerging tech relating to AR/VR, machine learning, current simulation tools and who uses them, sensor/touch technologies, and much more.

Our final product, Qui, is a toolset with a portable smart workspace which allows users to indicate object placement and movement to others across the metaverse, in real time, in synchronicity with visuals applied in augmented reality. It's intended use is for conducting Desktop Walkthroughs (a design tool used to simulate a service experience for testing and ideation purposes), though the potential to evolve into further applications is notable. Qui also reintroduces touch sensation to the AR metaverse, a fundamental element of subconscious learning. By enabling physical touch during collaborative activities, participants engage different pathways for their brain to make connections during formative interactions. Qui will make remote tabletop walkthroughs easier to conduct for remote teams, and will enhance the subconscious learning abilities of interns in the metaverse. Qui is supported by the service TimeHop, a platform which captures all walkthroughs conducted in the metaverse and allows for review, revision, and the ability to share results across a network of TimeHop/Qui users.

Course Structure & Timeline
Three Modules, Three Opportunities for Evaluation

Module 01:

The first diamond focused on concept generation. We utilized ideation methods to discover insights which lead to ideas, developed possible scenarios, build rough models of our strongest solutions, and set the general direction which our project was heading.
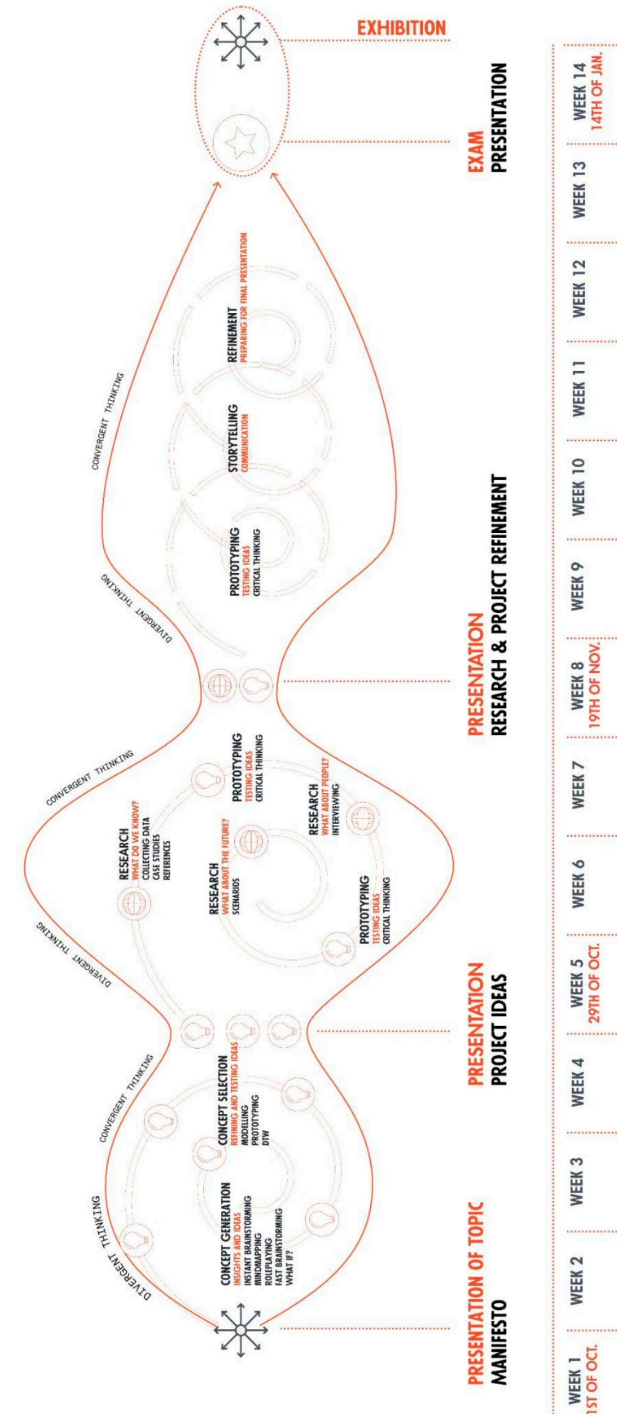
Module 02:

The goal of the second diamond wasn't to validate our assumptions, but to highlight the flaws in our initial thinking. We collected secondary research and conducted primary research through remote interviews. We compiled case studies and supplemental data. We used these findings to refine and reframe our scenario, and reform our prototypes. The more we researched, the more we were able to test our ideas using informed critical thinking.

Module 03:

The third and final diamond is when the product took form, and all of our research converged into the most direct and applicable solution. Our work became more physical as we sourced materials and prototyping resources, programmed electronics, and designed the service to support our users in their tabletop walkthrough efforts. We developed the branding and storytelling which characterizes Qui, readying our product to face the world of tomorrow.

> "This course seemed immediately huge, very intimidating and challenging, because it felt way bigger than me. It still feels like this, but I recognize myself part of its functioning."
>
> - MariaStella Russo
>   Interior Design

EXHIBITION

EXAM PRESENTATION

CONVERGENT THINKING

REFINEMENT
PREPARING FOR FINAL PRESENTATION

STORYTELLING
COMMUNICATION

PROTOTYPING
TESTING IDEAS
CRITICAL THINKING

DIVERGENT THINKING

PRESENTATION
RESEARCH & PROJECT REFINEMENT

CONVERGENT THINKING

RESEARCH
WHAT DO WE KNOW?
COLLECTING DATA
CASE STUDIES
REFERENCES

RESEARCH
WHAT ABOUT THE FUTURE?
SCENARIOS

PROTOTYPING
TESTING IDEAS
CRITICAL THINKING

RESEARCH
WHAT ABOUT PEOPLE?
INTERVIEWING

PROTOTYPING
TESTING IDEAS
CRITICAL THINKING

DIVERGENT THINKING

PRESENTATION
PROJECT IDEAS

CONVERGENT THINKING

CONCEPT SELECTION
REFINING AND TESTING IDEAS
MODELLING
PROTOTYPING
DTW

CONCEPT GENERATION
INSIGHTS AND IDEAS
INSTANT BRAINSTORMING
MINDMAPPING
ROLEPLAYING
FAST BRAINSTORMING
WHAT IF?

DIVERGENT THINKING

PRESENTATION OF TOPIC
MANIFESTO

WEEK 1 1ST OF OCT.	WEEK 2	WEEK 3	WEEK 4	WEEK 5 29TH OF OCT.	WEEK 6	WEEK 7	WEEK 8 19TH OF NOV.	WEEK 9	WEEK 10	WEEK 11	WEEK 12	WEEK 13	WEEK 14 14TH OF JAN.

ideation

2

"My favorite part of ideation was working on the education topic, because it feels relevant to me. It's always fun to brainstorm about your own challenges."

- Saba Soltanshahi
  Industrial Design

brainstorming | scenario | initial concepts | feedback

Rapid Brainstorming & Ideation

The Efforts and Outcomes of Module 01.

Gameplay for Fresh Ideas

Fishbowl

After we were presented with the premise of this semester's Innovation Studio (uncertain times: the future of higher education in 2037), we kicked off brainstorming by conducting two rounds of Fishbowl gameplay, a tool (from the book *Gamestorming: A Playbook for Innovators, Rulebreakers, and Changemakers* by Sunni Brown and Hames Macanufo; and from the *Facilitator's Guide to Participatory Decision Making* by Sam Karner) which designers can use to get into the mindset of different stakeholders involved in a project scenario. This approach requires markers, post-it notes, a flat surface, and paper. Fishbowl participants can be the stakeholders themselves, or can be performed by designers roleplaying as the stakeholders. Either way, the game is conducted in the same way to activate the attention and rely on listening/observation skills to find meaningful insights. Participants are separated into two groups, (1) Players, who sit in a small circle at the center of the room (2) Observers, who sit in a larger circle surrounding the smaller one. A topic relevant to the project is introduced to the group, often phrased as a question. Once the topic is announced, Players have 15 minutes to discuss their views. It is important that Players remain respectful and allow for full thoughts to be shared without cutting one another off. It is equally important that Observers pay close attention and make note of the discussion points as well as unspoken communication which may be

visible outside of the conversation. After the 15 minutes are over, the groups switch roles and the game is played again. Once the second conversation is completed, volunteers share their findings and the group discusses their experiences throughout the process.

In our first round, we chose three of our teammates at random to be Players and roleplay as a university student, a professor, and a university administrator, while the remaining two teammates served as silent Observers. To prompt our fishbowl, we asked "How can students be better served by their higher education institutions?" At this time, we did not mandate that the roleplay exist as though it were 2037. We were more interested in discovering current flaws in the system, with understanding that we would research futuristic contexts later in our design process. The first conversation quickly became about the importance of internships in the undergraduate experience, and this being on all our minds, it colored the direction of the second conversation as well. We clearly found a point of interest for our team, which also was relevant to the experiences of all stakeholders involved. After conducting both rounds of the fishbowl, we color coded our findings to indicate whether it was written by a student, professor, or administrator, and affinitized our key findings through a SWOT analysis. Strengths were observations about already existing advantages within the current higher education system; Weaknesses were observations about unmet expectations, or problems occurring within the current higher education system; Opportunities
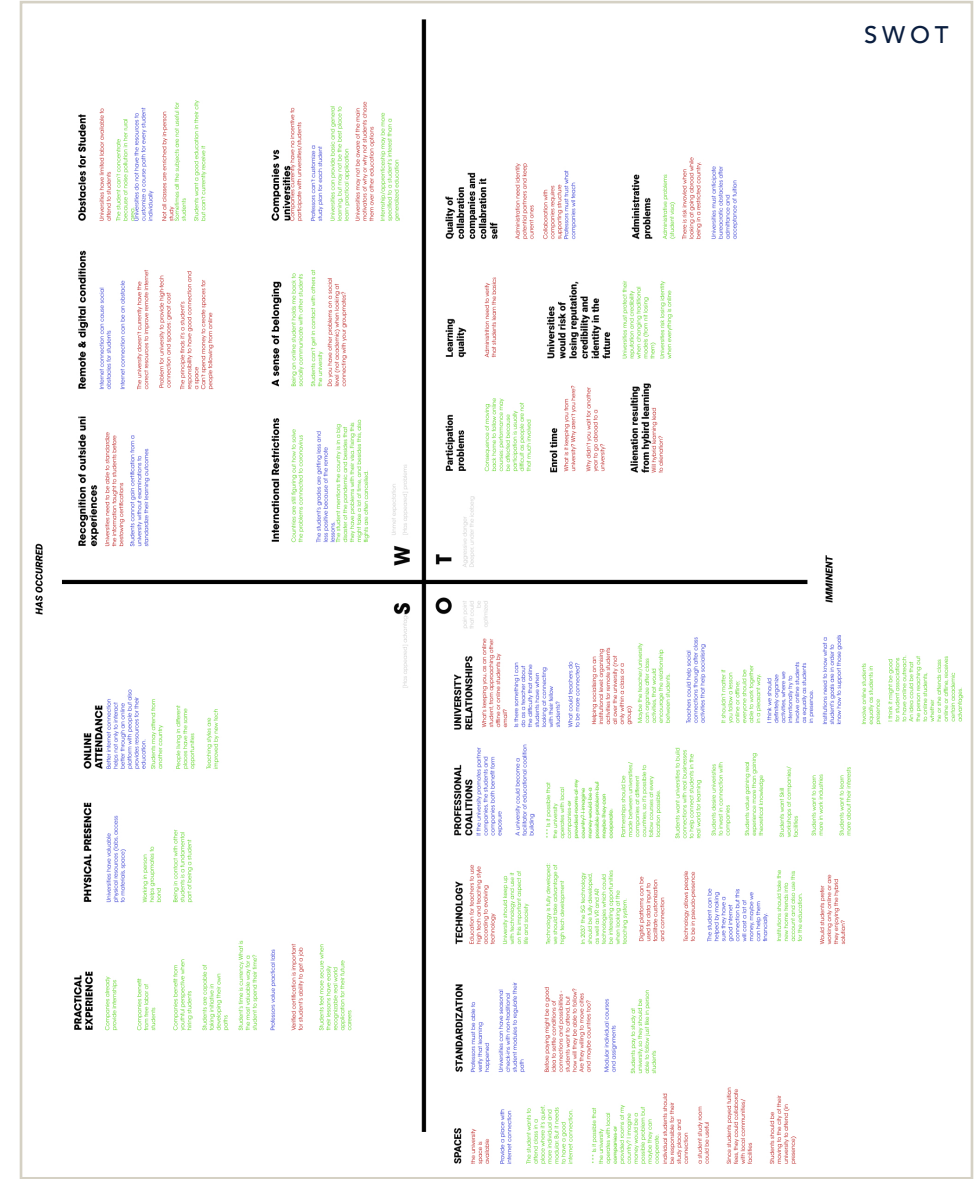
were observations about pain-points which could be optimized within the current higher education system; and Threats were deeper, underlying dangers of the current higher education system. We clustered our findings, and noted that there was a lot of validity surrounding the Strengths and

Opportunities of practical experiences, physical vs. online presence, technology, and professional/university coalition building. After conferring with our advisors, we began discussing general product service system ideas in the realm of student internships during the higher education experience.
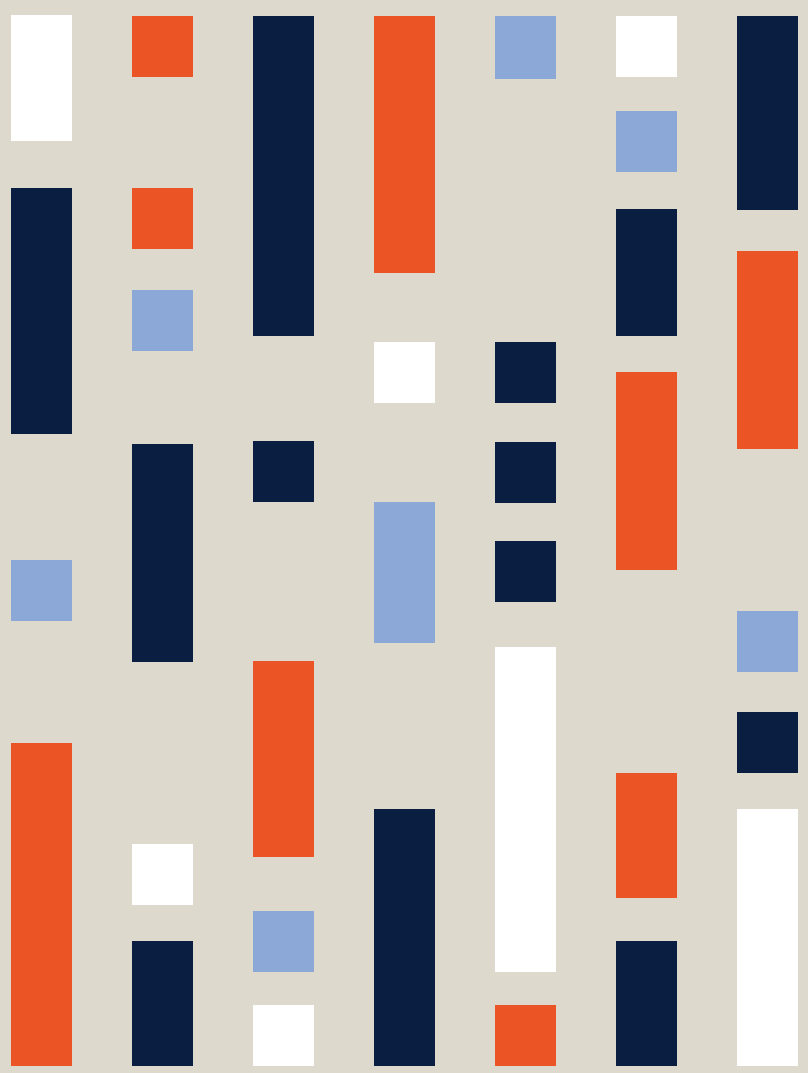
In the year 2037, design internships will occur throughout the entire duration of higher education.

# Three PSS Concepts

Our Initial Product Service Systems.

"At first in the brainstorming phase I was uncertain about our ideas, because we were only able to do limited research beforehand. There were times that I doubted our first ideas would be good enough."

- Saba Soltanshahi
  Industrial Design

We underwent roughly five rounds of rapid ideation surrounding internships in higher education, pushing ourselves to draw from as many directions as we could to sketch and describe various product solutions to the struggles of surrounding student internships on the student, educator, administrative, and company levels. We selected three possible directions which we felt confident could be strong projects to pursue over the coming months. We called our three products LightenUp, Neuralink University, and Take A Seat.
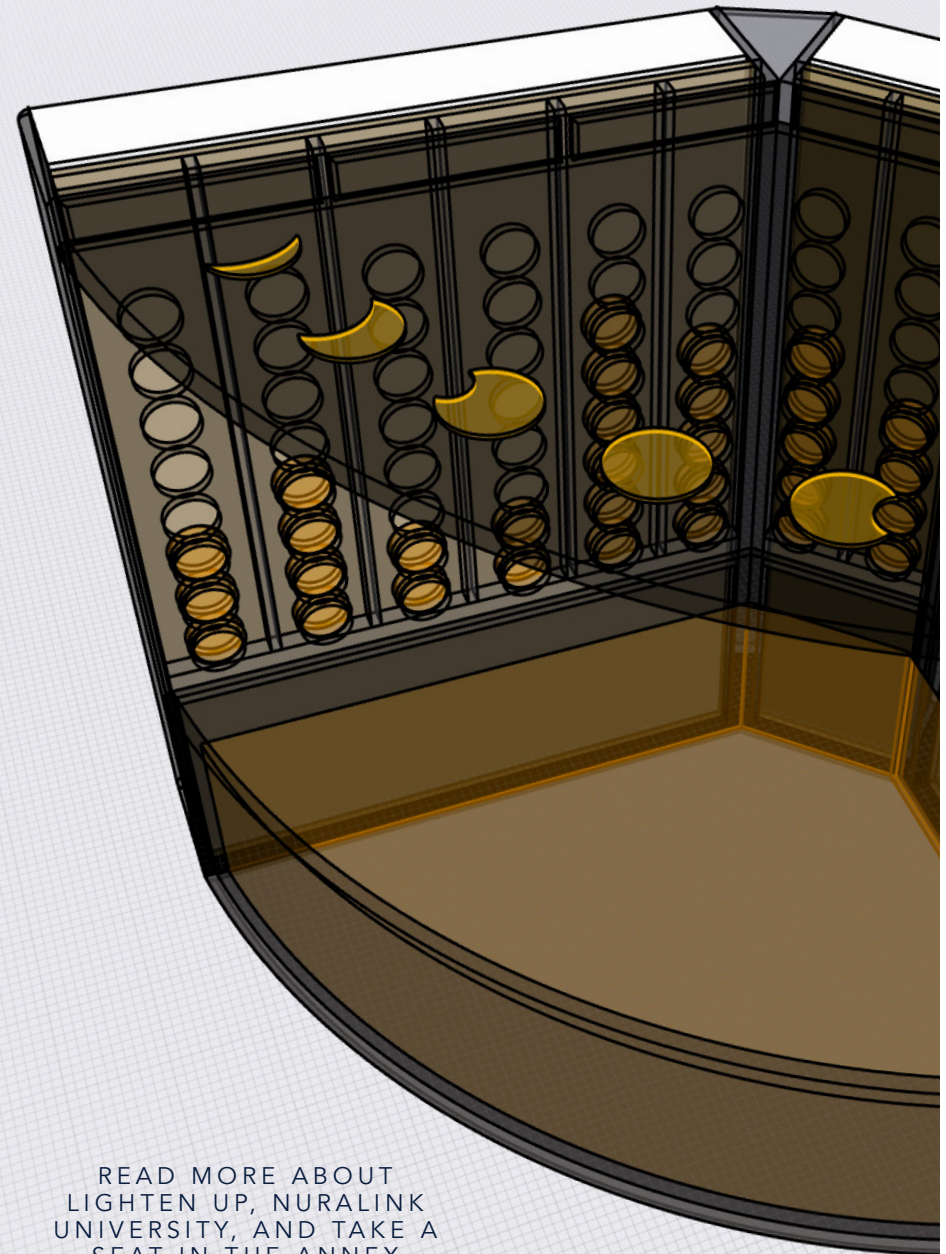
TAKE A SEAT

RENDER

LED's

IN BRANDING COLOR

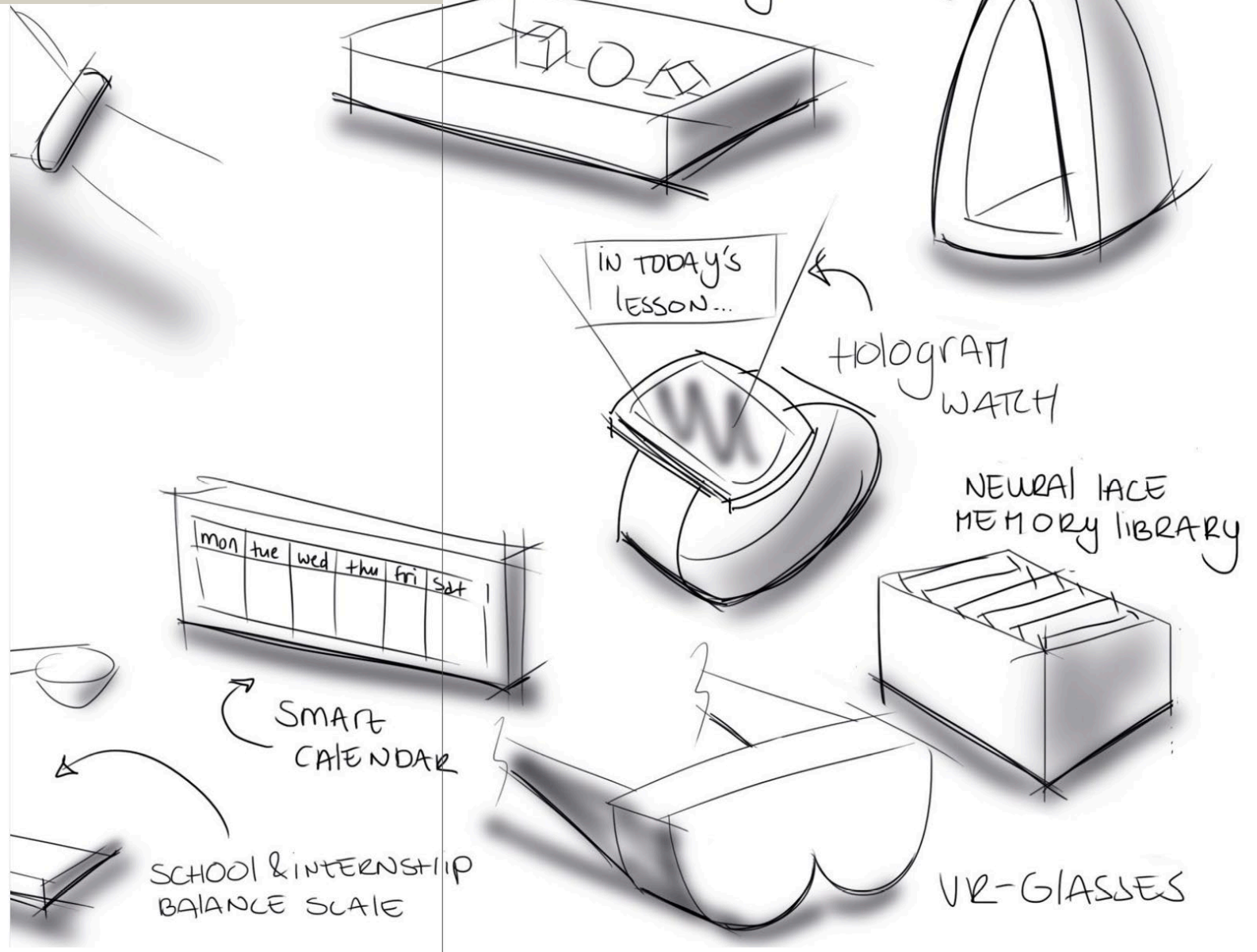SPEAKER
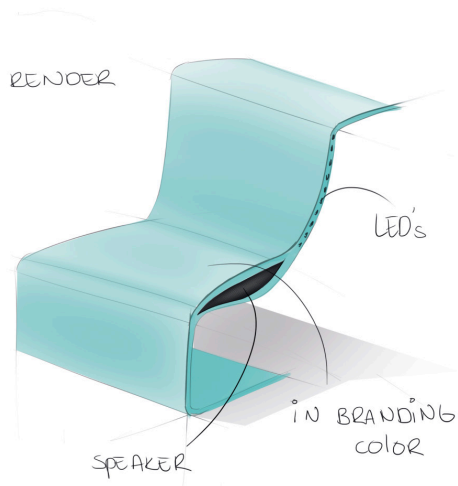
NEURALINK UNIVERSITY

LIGHTEN UP

READ MORE ABOUT LIGHTEN UP, NURALINK UNIVERSITY, AND TAKE A SEAT IN THE ANNEX

Feedback

Thoughts From Our Advisory Board.

We shared our work with a panel of our advisors, with the physical models in presence to show our thinking, videos displaying how users would interact with the products, and supplementary communication points surrounding our display. Their feedback for LightenUp was that it wasn't addressing what they viewed as the core needs of interns of the future. The data visualization was appreciated, as well as the poetical aesthetic choices, but the underlying need wasn't strong enough in the eyes of our advisors. Their thoughts on Take A Seat was that it could go one of two ways; either it's a product which could reproduce the real life environment which the student is removed from, or it could be a product which assists the student and their changing needs throughout the day. If we chose this direction, we would need to elevate our approach. But the most conversation stirred around Neuralink University. Our advisors agreed that our system was too complex. They argued the importance of involving Neuralink technologies at all, and the further implications of universities or employers having access to all of our memories. But an important part of this project's story is that on this same day, Meta was announced, and suddenly the tech world was abuzz with conversations of future possibilities within the metaverse. It seemed that serendipitously, we were given a way in which a virtual internship could be made into a real-time augmented reality, remote and accessible, but directly involving real people. We were advised to continue thinking down this path, to reframe our scenario, and begin research on what the internship experience brings to students and how we could leverage emerging tech to meet our needs.

MONTESSORI TOYS

VR POP-UP TENT

IN TODAY'S LESSON...

HOLOGRAM WATCH

NEURAL LACE MEMORY LIBRARY

mon tue wed thu fri sat

SMART CALENDAR

SCHOOL & INTERNSHIP BALANCE SCALE

VR-GLASSES

research

3

"The research phase gave me the opportunity to learn how wide the horizons of what we were hypothesizing were. The research gave me the ability to move to a more practical approach."

- MariaStella Russo
  Interior Design

Refined Scenario & User Archetypes

Defining Our Context to Direct Our Research.

Refined Scenario

We began the research phase by establishing a new scenario. "*In the year 2037, design internships will occur throughout the entire duration of higher education, now made widely accessible to students remotely through the general public's frequent use of the metaverse.*" The key factors of this scenario are that design internships exist in tandem with classwork, design internships are able to be adapted to remote working models, and average people (students, universities, and companies included) are comfortable with and fluent in using the metaverse and accompanying innovations/tech (VR, XR, AR, AI, sensory tech, etc.). We made the choice to specify that this will apply to design internships alone for a few reasons. First, internships in vastly different fields look vastly different. A biomedical engineering internship will not have the same activities as a creative advertising internship. However, we didn't want to narrow in too much by selecting only one specific design field, because our hope was and remains that our product will help many interns to access these experience and takeaway meaningful lessons from the time they spend within a company. The second reason we chose to frame our scenario around design internships was practical. Most of us had participated in a design internship of some sort during our time as undergraduate students. Our networks allowed us many connections to others in varied design fields who also had recent design internship experiences, making our ability to conduct interviews

much easier. For these reasons, we focused our attention on the existence of design internships in the metaverse.

Scenario Origin (2022)

In 2021, internships are widely used as a graduation requirement for master's degrees in design. These internships often occur towards the end of the student's education as a final testament to their ability, and for contextualization of what they learned at University. In general, the student is left to their own devices to find and secure this position, with professors giving general input but having minimal involvement in the roles the student fulfills during their professional exposure. After the initial approval of the internship from the University, the connection between the two institutions is lost, and the student simply executes what is required of them to receive their degree. In the pursuit of an appropriate internship, the student may need to temporarily uproot their lives to physically access the job market if they don't already live in a place where such positions are available. As a demographic who may still be reliant on their family for financial stability, or may be working part or full time in addition to studying full time, the costs of relocation can be insurmountable. Travel, rent (possibly in their city of origin as well as their temporary location), big-city food prices, the purchase of office appropriate work attire: these costs add up, meaning that only some students can possibly make this arrangement work, especially when considering that interns often go unpaid for their labor. The alternative to this is to

settle for whatever internships exist within their immediate proximity which will fulfill their graduation requirement, regardless of whether it is desirable for their personal educational or career goals. The current internship model isn't working as our society becomes less centralized and more sensitive to equality of accessibility.

Scenario Tragectory (2037)

In the year 2037, design internships will occur throughout the entire duration of higher education, now made widely accessible to students remotely through the general public's frequent use of the metaverse. Design students who are exposed to internships early in their education report benefits in real-world orientation, industry understanding, and future employability among many others. These benefits will be fully realized and introduced early on in future curriculum using innovative methods. Within our

scenario, we are assuming that today's leading tech innovators have been successful in their current ventures; Neuralink, Meta, and Hanson Robotics are assumed as commonplace. According to Mark Zuckerberg in an interview with NPR (8 Nov. 2021), "The next platform and medium will be even more immersive, an embodied internet where you're in the experience, not just looking at it. And we call this the metaverse." The metaverse will be an experiential space, including social connection, entertainment, gaming, fitness, work, education and commerce. Facebook will bring the metaverse into average homes using the brand Meta, for which $150Million USD have already been allocated to develop the educational application. This will revolutionize group and independent learning. Access to the metaverse will require a new generation of virtual reality (VR) technology to keep up the immersive sensation. The future

SCENARIO B

In the year 2037, design internships will occur throughout the entire duration of higher education, now made widely accessible to students remotely through the general public's frequent use of the metaverse.

of VR promises involvement of all the senses (virtual smell and touch included), devices which are physically nonintrusive, and a new focus on specialization training. Innovators in this field believe this tech will develop to the point of extended reality (XR) – a term that covers VR, augmented reality (AR), and mixed reality (MR) – and will be one of the most transformative trends of the future. Artificial Intelligence (AI) will also see an industry boom. Socially intelligent AI which we are only beginning to familiarize ourselves with now will no longer be daunting possibilities, but facets of regular daily life.

"Reframing and refining our scenario required our team to place the research we'd spent the past few weeks completing into actionable context."

- Morgan Ricard
  Graphic Design & Advertising

Archetypes
Who are we designing for?

It was a useful exercise for our team to develop character archetypes at this point of the project. Abstraction and analogy can be powerful tools when designing, and when paired with empathy, to think of our users as archetypes can allow a designer to relate to them more intimately while still avoiding viewing the user a singularly articulated person. We realized the primary people who would be directly interacting with our product would be the **interns**, **creative directors** (the office worker who is most commonly a creative intern's boss), and the company's **HR person** (the person in the office who hires the intern and discusses with them any physical materials they may need which the company would have to provide). These people were selected based on our experiences, and the experiences of our peers. We likened the hosting company to a ship, with many nautical roles needed for the ship to launch and operate correctly. The intern is like a **deckhand**, whose job is to assist in general tasks and learn about the operations of the ship, offering to pitch in wherever is needed until they gain more experience in a certain task and become promoted. The **creative director** (or comparable design department boss) is like the captain of the ship, guiding the direction of the project, overseeing all workers, and ensuring a successful journey. The company **HR person** is like the ship's quarter master. A quarter master on a ship oversees the officers of the deck and the navigators, and are the only person on the ship who is not subject to directly reporting to the captain. They hold equal but separate powers. When a dispute arises on the ship, the quarter master is usually the one responsible for deciding who is innocent or guilty, and how the guilty party will be punished. Viewing our direct actors in this way helped to think of how they relate to one another, and how our product could best serve the dynamic.

Interviews

From Education, Technology, and Corporate Sectors.

Focus Fields

Since the keywords of our scenario is REMOTE/INTERNSHIP/AR-VR-METAVERSE, we decided to conduct interviews in the following three aspects: EDUCATION\ TECHNOLOGY\COMPANIES. After determined the fields, we listed and decide the archetypes of people we would like to engage.

Overview

Approaching the interview process was daunting. To start, we identified three sectors which we would ideally like to investigate; **1) Education 2) Technology 3) Design Companies Who Hire Interns.** We identified what topics we would want to discuss with people from these sectors. After determining these fields, we selected archetypes of people we would like to engage with. We had topics in mind, but we were still limited by our access to such people. We created a grid, by topic, and our team filled in people we knew from our personal lives, undergraduate experiences, and professional careers whom we felt comfortable asking to participate in interviews for our project. Out of seven people contacted, four responded and agreed to become involved. We ultimately spoke with two remote student interns (**Y.W. Zhang**, and **K.Y. Chen**), one VR expert (**Y.X. She**), and one design team leader (**Joseph DiGioia**).

Structures and Scripts

We decided upon a semi structured interview, one with average standardization across interviewees, and a medium amount of directivity from the interviewer. We were permitted to go off script, but hoped to cover all the topics we'd planned for. As a team, we converted our list of topics into research questions for each person according to their background and developed a question path specific to the nature of the answers we hoped to uncover. We were careful to phrase our questions in such a way that no bias could be shown, to avoid leading our participants to the conclusions they may think we wanted to hear, but wanted our phrasing to encourage free flow of thought and rich substance for contemplation instead of surface level answers to surface level questions.

FIND ALL SCRIPTS AND ANSWERS IN THE ANNEX.

EDUCATION

01 Remote Student Intern

A student who had a experience of remote internship or regular internship

Interview Topics

Key values

Experiences

Pain points

Improvements

Future internships

02 Remote Educator

Someone who has designed a remote curriculum and experience

Interview Topics

Struggles

What worked

Personal testimonies

Improvements

TECHNOLOGY

01 Technology Expert

VR Expert | Ai Expert

Interview Topics

Prediction of technology

Extend of current possibilities

Existing trends

Biggest advantage/disadvantage

02 Game Designer

Person with game design experience

Interview Topics

Choose your adventures

Real-life experiences (make it realistic)

Prediction of future games

03 Test Users

Person who has encountered relevant tech in a testing setting

Interview Topics

Experimental Brain Tracking Tech Test Users

Users for the epidermal sensory tech

Amputees who feel touch in their minds while using prosthetics

COMPANY

01 Design Company Employee

Person involved in hiring process for internships

Interview Topics

Experiences	Key values
Future of internships	Internship development over past 10 years

Interviews Synthesis

Education

K.Y CHEN – REMOTE INTERN

Quality of Communication matters most in internship

The delighters of an internship are: close contact with colleagues. High quality and friendly co-workers, clear working method;

And the disappointments are: Amateur clients/large workload.

Also, interns always find struggles in inefficient communication with clients and with superiors, and difficulties of remaining real-time contact with co-workers during remote internship.

The **effectiveness of communication** during working matters most during internships - **which is what we want to focus on most** in the remote internship.

Satisfaction comes from being affirmed by companies

Interns tend to **feel satisfied after being affirmed by big companies,** and thus determine their **work view - Which means that we could add more expressions and ways of feedback for the remote interns.**

Scale the scenario first

It's wise to limit the user group into certain areas/ fields, and limit country range to avoid time zone problems.

For this reason, we are aiming at Italian-based design student interns.

Think of alternative interaction method other than visual/hearing

We're suggested to think beyond AR/VR, and beyond traditional interaction method.

Due to the possible visual/movement inconvenience of certain groups of people, it's crucial that we also consider something other than [view and touch the screen].

Also, few AR/VR devices aims at people with visual/hearing disabilities. Touching, as we consider, could be an alternative of the other senses.

Convenient, smart but also supplement emotional needs

It's suggested to **add a AR/VR meeting function** in which avatars meet together **after permission.**

Y.W ZHANG – REMOTE INTERN

In-person internship has more sense of humanity through physical touch

The in-person internship enables interns develop more intimate relationship with clients, which is attractive towards interns.

Supplement the missing part of the virtual communications

Due to the quality differences of communication, off-line internships provide interns with better atmosphere of actually learning, rather than accumulation of the resume.

Technology

Y.X SHE – VR EXPERT

VR Figma and simultaneous remote collaboration

Since the biggest problem of remote internship is to conduct effective communication between colleagues and clients, it will be super useful if an effective simultaneous remote collaboration platform could be built.

Promising future of VR

VR could witness promising future if field of games and entertainment, scientific research, archaeology, real estate industry and museum exhibition.

The biggest advantages of VR is that it could bring the experiences that doesn't come yet, or doesn't exist yet, to the users.

Immersing experience

Wearable devices could lead to headache if wearing for too long, and 3d dizziness for certain people. but also, the emersive experience provided by VR is inconveivable.

Company

J. DIGIOIA – DESIGN LEAD

If the metaverse becomes prominent, then smartphones will become just phones again.

J. Digioia brought up an interesting point, that **if all tech lives in the metaverse, reality outside of VR might actually go back to feeling non-digital by comparison.** A phone might still exist, but only for making calls and not for the millions of things we use it for currently, as those functions would primarily happen in virtual spaces. He thought **it could be interesting for our team to speak to young gen-z people who have never experienced a world before smart devices and social media,** to hear how they feel about how a hyper digital space might also create a vacuum and distinctly non-digital reality, the likes of which they never would have encountered.

Accessibility of internships from all locations would mean developing the design industry in corners of the planet where

it has never existed before, and to have avatars or visually alterable representations of ourselves could effect the prevalence of race/gender/age bias in hiring processes.

Evidence shows that **subconscious biases within the people responsible for hiring can create systemic barriers to entry for minorities, limiting a team's potential through irrelevant implicit screening criteria.** The degree of separation in the metaverse would have rippling effects on this phenomenon across office life, not limited to hiring but throughout team dynamics.

The attitudes and thought processes behind the work are what matter the most when assessing interns.

J. DiGioia used the phrase **"curiosity and passion"** multiple times during our conversation. He emphasized how valuable this was to a team, and had the potential to provide fresh energy. This tied in directly to design managers being able to see how a young designer thinks through their work. The passion needs to be backed up with process. This is the desirable quality which shows potential to be a strong designer.

A student who has a strong book is what's most important, but having recognizabe and respectable companies to list on a CV is often what a student is chasing after. J. Digioia talked about how his recent hires had experience at "local" places before graduation, but their portfolio was what got them the job. This means that for our solution, **having brand recognition for the CV isn't as important as the value the internship brings to the individual and their portfolio.**

Research

Falsifying, Not Validating.

Overveiw

Our advisors made it clear to us: the goal of conducting research after nearly a month of ideation about our topic was not to prove our ideas right, but to falsify our preconceived notions and identify what could be improved or discarded. This was a process of critical examination which changed our project outlook. We collected data on our users and surrounding actors, their demographics, trends, geographical realities, etc. Additionally, we needed to become experts on emerging tech surrounding the metaverse in order to know what was feasible speculation and what was pure science fiction. It was this research, along with many case studies, that lead us to our final scenario.

FIND OUR RESEARCH IN THE ANNEX

SCENARIO C (FINAL)

In 2037 design internships for university students will exist in hybrid (remote and in-presence) offices where all interns are given equal access to work opportunities due to the general public's adaption of the metaverse as a common part of daily life.

Case Studies

Falsifying, Not Validating.

Overview

Discovering case studies was much like our paper research, but these were examples of people doing work related to our own, not only flat data surrounding the topic. Our ideation phase left our minds open agape and reeling at the possibilities the future may hold. We were also astounded by the newly announced existance of Meta, and the way common people's awareness of the metaverse could potentially affect not only our project, but the trajectory of every major field in coming years. After uncovering a need for students to increase their access to internships because of the observable benefits to them, Mark Zuckerberg introduced to us a way where the world could be

"... like we're right there with people no matter how far apart we actually are. We'll be able to express ourselves in new joyful, completely immersive ways."

Can you fault us for allowing our imaginations to run wild? But such promise cannot be without drawbacks, and we understood that to open ourselves to desigining for experiences in the metaverse, we had a lot of work ahead of us to become versed in the technology, and within the context of our scenario. We explored current internship models, VR and AR in work and education, ludic learning, predicted applications for Elon Musk's Neuralink, machine learning, and emerging touch technologies. Our goal once agin was not to validate our existing hypotheses, but to challenge our notion of what was possible, or even what was necessary. This process created as many obstacles as it did open doors.

Focal Case Studies

Meta Educational Application, Oculus, and the ENGAGE Platform VR Education Capabilities.

Meta | A Social Technology Company

meta.com

Description

On October 28th, 2021, Mark Zuckerberg introduced Meta, which aims to create a metaverse as a new space for people to connect, find communities and grow businesses; a hybrid of today's online social experiences, sometimes expanded into three dimensions or projected into the physical world. It will let you share immersive experiences with other people even when you can't be together — and do things together you couldn't do in the physical world. It's the next evolution in a long line of social technologies. The metaverse will be a space to explore experiences from social connection, to entertainment, gaming, fitness, work, education and commerce.

Relevance

Our initial exploration of internships in VR relied heavily on brain chip technology to create shared realities across distances. But the day we presented the first module of our work was the same day that Meta launched for the public; the realm of possibilities within the scope of our project instantly shifted. Our innovation will exist in tandem with the metaverse, and while the metaverse isn't necessarily synonymous with Meta, the two are closely linked as Meta is the current industry leader for pushing innovation and business within the metaverse. Thanks to the efforts of Meta, we now have a framework to build upon while predicting how augmented realities could open accessibility and frequency of internships for design students in higher education.

Key Takeaways

(A) Immersive experiences through Meta will bridge physical gaos between people (B) The Metaverse will be an entirely new playground for social and business worlds to thrive (C) Meta is moving beyond 2D screens toward immersive experiences like augmented and virtual reality to help build the next evolution in social technology.

Meta | Education

meta.com

Description

Meta technologists are already working to consider the educational implications of this technology. So far, they intend to allow users to see macro or micro science at human scale (move through the solar system to study planets, enter an ant hill with David Attenborough to study biology), to physically do walkthroughs of a service manual if learning engineering repairs, or to go back in time virtually to study history.

Key Takeaways

(A) Meta has put aside $150Million to train creators to build immersive educational content (B) Allows people to learn first-hand in ways couldn't before (C) When paired with Oculus headset technologies, becomes fully immersive.

Oculus Headsets | Virtual Reality Console

meta.com

Description

Oculus is a division of Meta Platforms that produces virtual reality headsets, including the Oculus Rift and Oculus Quest lines and controllers. For now, it covers gaming, fitness, entertainment and work experiences.

The product line ranges in cost from $299 USD (the Oculus Quest 2 with 128GB of storage) to $799 USD (Oculus for Business Solutions, which includes hardware, software, services and 24/hr product support).

Oculus creating new ways for people to defy distance and connect with each other and the world around them. Through virtual reality, it can radically redefine the way people work, play and connect.

image from Cambridge University Press

Relevance

As the metaverse becomes more widespread, users will require a modality to access it, like how home computers became increasingly common as the internet became more popular. Similar to the wide acceptance of the internet, this will likely begin with clunky and obtrusive initial models but eventually will become sleeker and needs-specific; like how a mobile phone is perfect for internet access on the go, but a desktop is still best for working on and transferring large files across the web. When filling the role of product designers, we must ask what types of tools will fill the needs to metaverse users, particularly student/intern users, and how we can optimize those tools

Key Takeaways

(A) Oculus has a research team consist of researchers and engineers and wide range of expertise to make the best consumer virtual, augmented, and mixed reality (B) With Oculus Touch controllers, you can transport your hands and gestures right into a game or virtual reality (C) Oculus set can be paired with educational programs and make an immersive learning experience.

Oculus Hand Tracking | Precise Control

meta.com

Description

Hand Tracking is a feature for Oculus Quest 2 and Quest (VR headset) which allows the use of your hands in place of your touch controllers. Hand tracking works by using the inside-out cameras on the headset, that detect the position and orientation of your hands and the configuration of your fingers. Once detected, computer vision algorithms are used to track the movement and orientation of your hands.

Hand Tracking utilizes inside-out cameras on the devices which detect the orientation and position of a users hands and fingers. Once recognized, computer vision algorithms track the path the hands make and their orientation. The tracking allows for Point and Pinch, Pinch and Scroll, Palm Pinch.

Key Takeaways

(A) Oculus VR technology, that is designed to work with Oculus Touch controllers, also offers a free-hands experience (B) The software analyzes images of your hands from the sensors on your headset to estimate the location of key points on your hands, such as your knuckles or fingertips; (C) The software fits a generic hand model over the estimated points of your hands and your hand size, resulting in hand pose data.

ENGAGE Platform | VR Education

immersivevreducation.com

Description

ENGAGE is an advanced communications platform that seeks to transform how people collaborate with each other globally through immersive technologies. It's ideal for collaboration, education, simulated training and virtual events, and it is trusted by fortune 500 companies and used globally as an alternative to video based communications.

Engage's platform has been developed since 2015 and was released in 2018 to enable remote learning: it empowers educators and companies to host meetings, presentations, classes and events with people across the world. Using the platform, virtual reality training and experiences can be created in minutes. The tools are very easy to use and require no technical expertise. You can choose to host your virtual reality sessions live, or record and save them for others

to experience later. A wide variety of effective and immersive virtual experiences can be created with an extensive library of virtual objects, effects and virtual locations available on the platform.

The company believes that the platform could overcome current challenges and limitations, such as

- space restrictions in classes at physical locations
- the limited interaction between students and teachers offered by traditional online education methods
- low completion rates of online courses
- geographical locations of students/teachers
- rising costs of education

Relevance

This early instance of Virtual Reality learning focused on remote learning and proximity of education challenges. The

ease of use was really important to our group, as we don't want our future users to have to learn new behaviors in addition to learning about the field they're working in for the first time during internship.

Key Takeaways

(A) A study found that medical students trained using VR were able to carry out procedures quicker and more accurately than peers trained with traditional methods (B) People today say "let's Skype" when talking about online communications and meetings. In the future we want people to say "let's Engage" and enter VR to communicate in a more natural way (C) Social VR Platform ENGAGE Generated Over $1.4M in Revenue in First Half of 2021.

image from Oculus

Feedback

Thoughts From Our Advisory Board.

We received largely positive feedback on our research efforts. Our advisor Stefana Broadbent, an anthropologist at Politecnico di Milano, expressed her regret that we had not spent more time researching the individual experiences of interns rather than only viewing the internships as macro level models from a university curriculum perspective. We responded to this by collecting personal design diaries from current and past design interns our teammate Annie knew from her undergraduate experience in China.

Though understanding currently emerging technology was important for our team to determine feasibility of our product, we were encourage to not get too wrapped up in the science fiction appeal of our scenario, and remain focused on the user needs. It was with this advice in mind that we returned to the drawing board to conceive of our final product service system idea and work towards a finished model.

"My favorite part of our research was getting to explore the metaverse."

- Eline Muijters
  Industrial Design Engineering

prototyping

4

"It was great when we finally decided on the conceptual details and actually began building the product idea. We kept pushing ourselves to be creative, and to think outside the box."

\- Eline Muijters
Industrial Design Engineering

Desktop Walkthroughs

The Design Method We Chose to Focus on.

Closing in Focus

Our remote intern interviewees' design diaries helped us to understand what tasks were most important to them, but it was a challenge to find a unifying struggle for all kinds of design internship. We chose to narrow in further after hearing the testimony of a professional designer attempting to conduct a remote desktop walkthrough and leaving the experience having decided it couldn't be done. Understanding the usefulness of this tool and the importance of young designers gaining experience in it, we decided this was the circumstance we could design for.

Desktop Walkthrough

What is it?

A desktop walkthrough is a tool which allows designers to easily and quickly simulate end-to-end customer experiences for proposed services and/or spaces. It's a form of design game-play which is conducted on a tabletop, sometimes as a form of co-designing with stakeholders, sometimes to illustrate a proposal better to clients.

When and Why?

The real value of this tool isn't the maps or pieces themselves, but the process and insight gained from playing through the experience one step at a time. When conducting a desktop walkthrough, players can rapidly test scenarios and their alternatives.

A key factor of desktop walkthroughs is the ability to rapidly ideate. All participants must be able to manipulate the pieces on the map simultaneously, and test in real-time as ideas occur. The fidelity of the objects/people the pieces represent isn't as important as the conversations generated around the interactions. Refinement happens quickly and cohesively when all participants have a seat at the table.

image from TiSDD

Elements of a Standard Desktop Walkthrough

Duration

Prep: 15min - 3hrs

Game Play: 1hr - 1day (set clearly defined timeline for interactions)

Materials (Ideal Situation)

Pens, scissors, glue, paper, cardboard, plasticine, toy figurines, LEGOs, flipchart paper, sticky notes, digital camera

---

Facilitators

1+

Participants

3-6

Research Techniques

Participant observation, interviews, co-creative workshops

Expected Output

Documentation of processes and stakeholder journeys in the form of notes/photogrpahss/videos, shared understanding about importance of various elements

Our desktop walkthrough information is inspired by *This Is Service Design Doing*, an online library of design methods

PREP GUIDE: BEFORE YOU BEGIN

1 **Reflect and Define Your Questions**

Discuss the context of your design challenge with your team, and the desired outcomes of this research. What does your team hope to learn through this activity? What is the goal of your prototype? Are you testing all elements of the experience, or a specific moment? These questions should also help you to identify who should be involved in the walkthrough. Who are the mandatory and optional participants for a successful run through? Do you want to use this tool internally, or should potential users or other stakeholders also be included?

2 **Workspace and Materials**

Select the appropriate materials for your desktop walkthrough. The surface could be a digitally rendered and printed tabletop map, or it could be a big sheets of blank paper with markers available for use on the spot. Set up the surface on a table that is not too big, so that all participants can stand around it and reach across the full plane and contribute simultaneously without hindrance.

3 **Brainstorm an Initial Draft**

Choose a persona within your scenario and do a speed run though of their journey. Quickly sort your sticky notes chronologically. It is okay if this does not result in an immediately formed customer journey, this phase of preparation is to understand how best to prepare participants in the real walkthrough. (If this step is confusing, please revisit after having read the Use Guide to the right.)

4 **Mapping and Stages**

Your mock journey should highlight for you and your team what locations are important. If your space has not already been determined by the context of this walkthrough, quickly create a surface map which includes all relevant locations of the service experience. You may decide to zoom in on certain locations to allow for more intricate interactions. It is also allowed to create a detailed stage plan for each location.

5 **Define Roles, Set, and Props**

Who and what? Pick figurines to represent each role which needs casting, build any essential props for said roles using whichever materials suit your needs best: paper, cardboard, LEGOs, play-doh, etc.

6 **Assign Roles**

Who is going to play which role? A member of your team should also be assigned to keep track of insights, pain points, or ideas which arise during game play

USE GUIDE: CONDUCTING GAME PLAY

1 **First Walkthrough**

Put all the actors/props in their starting positions and, loosely based on your prep draft, play through the service from beginning to end. Move the figures around on the map. Act out all necessary dialogue and do all the interactions with other actors, devices, and so on. Who/what has to move at each step of the journey? How do parts come together?

2 **List Insights, Pain Points, and Ideas**

Your observer should be taking notes and documentation throughout. Take a few moments to reflect on what did and didn't work, what you would like to change or try during the next play through. Quickly synthesize the findings after each round before beginning a new one.

3 **Iterate and Decide Next Variation**

After fully completing a round, quickly decide (majority vote among participants) which of the untested changes and ideas you want to try next. Then repeat. When you find solutions which resonate, take a moment to record them in a detailed fashion for later. Stop playing either when time is up for your workshop or when the group his creative block that requires them to switch their train of thought – for example, returning to research or more intensive ideation.

4 **Document and Record**

Document the finalized work. Turn discoveries into customer journey maps, photo storyboards, or videos to document the latest version(s) of the service experience from your walkthroughs. Reflect on the live notes your observer took and identify key insights and pain points or questions that need to be addressed as you progress through the design process.

5 **Present Findings (Optional)**

This may be an opportunity to bring stakeholders or potential users you're co-designing with back into the process. With storytelling, present your last iteration and key insights to stakeholders and gather their feedback. Be sure to also document their reactions, and apply relevant feedback to your updated service.

Game Play Tips:

Importance of An Observer

Aim for at least one observer for each walkthrough (though 2-3 is even better) to balance judgment and counter the bias of the players. The observer takes an independent view and gives feedback to the team.

Always Finish

Always see a walkthrough through to the end. Especially in early iterations, ideas come in abundance and can disrupt the flow. To address that, ask everybody to write their ideas and reflections down and wait to discuss them at the next step.

Stay in the Flow

Watch out for talking in the groups, as the method can quickly trigger deep discussions.

Avoid Teleportation

Watch out for teleporting. How did that person get here? How did that object get here? Where did they go afterwards? Really play with the toys.

Introduce a Director if There's Chaos

A director can help your group with making decisions or juggling too many wildly different ideas. Only the director can stop the walkthrough to discuss questions or make changes to the other actors. The changes or ideas are then played through. The learnings are documented. After a set number of iterations (e.g., 3–5), the role of director can change to another player
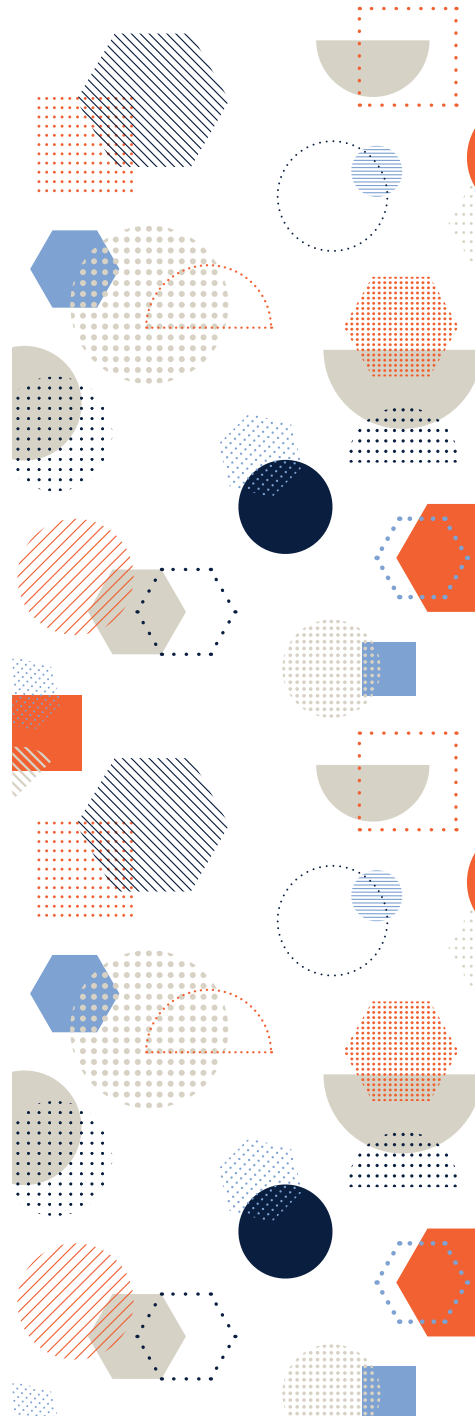
Desktop Walkthrough Example

Exhibition Design

An example scenario could be that of an exhibition designer who could be using a Desktop walkthrough to design the arrangement of the exhibition, from the location of display stands of different objects, the place for the receptionist, relaxing areas that contains restaurant or cafe style foodservice, coffee bar, resting spots along the user journey, and the spots for souvenir shops.

This would be an ideal tool for them to use to help them to figure out the visiting route for the viewers, and inolve potential users in the co-design process to learn what aspects are most appealing to them.

They may use props to represent exhibiting objects, resting chairs, information points, restaurants coffee bars and souvenir shops because they're testing how the visitors' experiences unwrap with the timeline, and would want to involve others such as their group members/ remote co-workers in this ideation session.
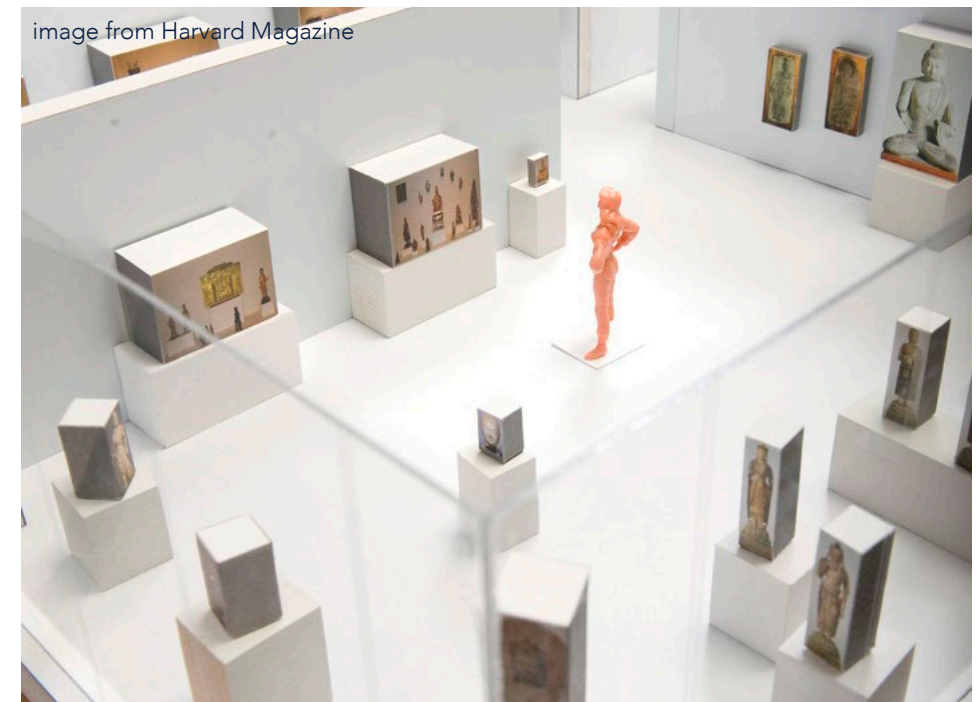
image from Harvard Magazine

SCENARIO B (FINAL)

In 2037 design internships for university students will exist in hybrid (remote and in-presence) offices where all interns are given equal access to work opportunities due to the general public's adaption of the metaverse as a common part of daily life.

a tool which allows designers to easily and quickly simulate end-to-end customer experiences for proposed services and/or spaces.

AUGMENTED REALITY

a technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite view
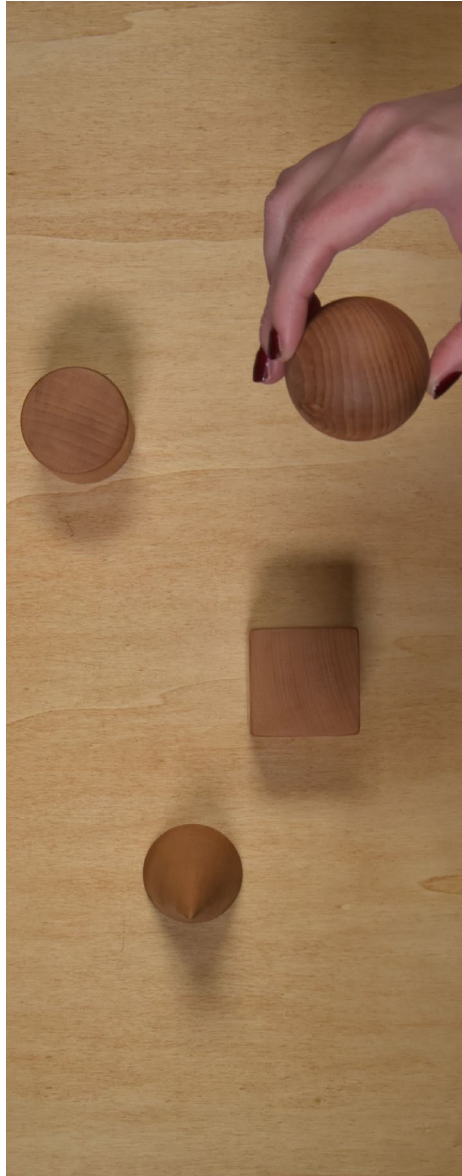
Our Product

Conducting Desktop Walkthroughs from Anywhere.

How to Use The Tool Set

Our product will be provided by Companies to all remote employees, and will be available for use in all physical offices. It allows users in the metaverse to have physical contact with a walkthrough, and seamless connection with one another.

The board is your playing space. Everyone, remote or in-presence, has access to a board which through the lens of metaverse augmented reality, looks the same for all players. All players have access to the same set of blocks. Before game play, as part of the method prep, all players will assign a visual façade to corresponding blocks, making it possible to view any item imaginable as props for your walkthrough via the metaverse, but still allowing for a solid item to be moved around a solid surface.

When a player moves a block around the board, others who are remotely connected but using separate boards can see the new placement lit on the surface below them, indicating an inconsistency with their view and their collaborator's view. Players then place the corresponding block in the correct location to re-sync, and the light turns off. These interactions will allow for all users to remain involved, even if they are not in the same physical space as their colleagues. To charge for frequent use, simply place on a charging surface (a common household commodity, in the future).

1 **Provide Remote and Presence Workers with The Product ToolSet (Board and Blocks)**

Deliver product to remote employees (including interns), and have a set in the physical office, in a space accessible to everyone.

2 **Assign Meaning to Blocks and Board**

Using augmented reality (AR) within the metaverse office, all players agree upon which blocks represent which prop in the walkthrough, and program the visuals to attach accordingly. Now, through the AR device used to enter the metaverse, all players are seeing the blocks as the same agreed upon objects. Boards should also be synced to show the same playing surface.
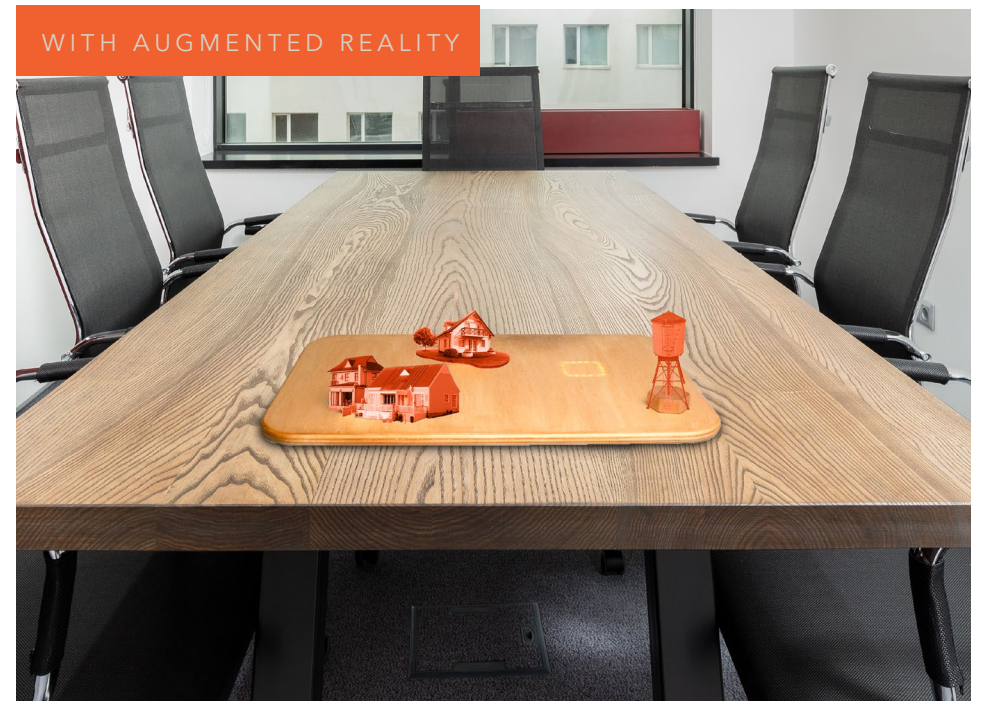
3 **Game Play**

When a player moves a block around the board, others who are remotely connected but using separate boards can see the new placement lit on the surface below them, indicating an inconsistency with their view and their collaborator's view.

4 **Unify the Board**

When noticing the lights outlining a spot of the board though the AR visuals, players then place the corresponding block in the correct location to re-sync, and the light turns off.

WITHOUT AUGMENTED REALITY

WITH AUGMENTED REALITY

WITHOUT AUGMENTED REALITY

WITH AUGMENTED REALITY
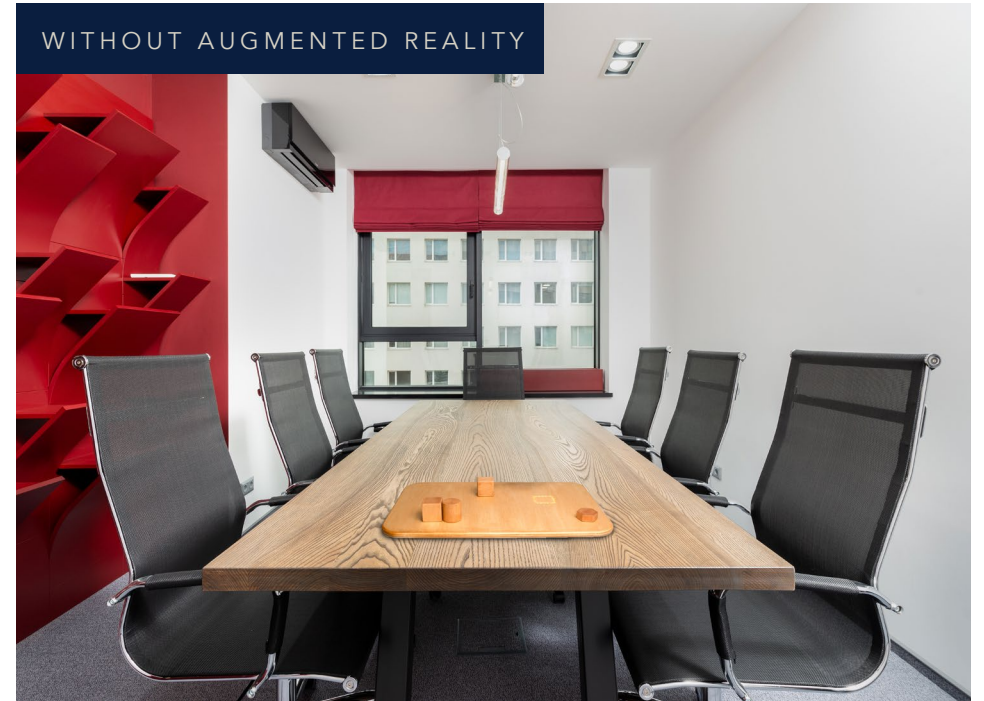
Product Features

Our design process is guided by **Enthusiasm**. We are motivated by the pursuit of relevant ideals: joy, beauty, community, sustainability. The product synthesizes our values.

Touch

This was the starting point for the ideation of our product.

We want to introduce it in people's lives and workspaces as a discreet but relevant tool that restores a sense of physicality in a world where the metaverse puts us to the test with the power of digitization.

Craftsmanship

While we are designing for 2037, we think it is important to go back to the origins of design. We believe that in the face of exponentially increasing levels in technology development, what can bring joy is the simplicity and care in the details of handcrafted shapes, for a timeless result.

An Indefinite Nature

We were inspired by Maria Montessori and her teaching method based on self-directed activity, hands-on learning and collaborative play. Dr. Maria Montessori discovered that a deeper understanding comes from a process of experiential learning through carefully selected materials that are simplified to push the development of specific abilities, leaving the children free in their choice and therefore stimulated by spontaneous interest.

Similarly, we choose simple, geometric and non-specific shaped blocks to facilitate a process not influenced by their determination, which can then help to focus on their role and on the interaction between elements. In addition, it is possible to view the specific image of what they represent within the Desktop Walkthrough (a building, a person, a tree) thanks to the use of AR headsets.

Augmented Reality (AR)
noun

(1) : a technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite view

If this computer's webcam were the receptor of an AR/VR headset, the POV on screen shows how the block could be tracked and given an new appearance in the metaverse. We created this tool using Unity and Vuforia. See *Materials* section for more details.
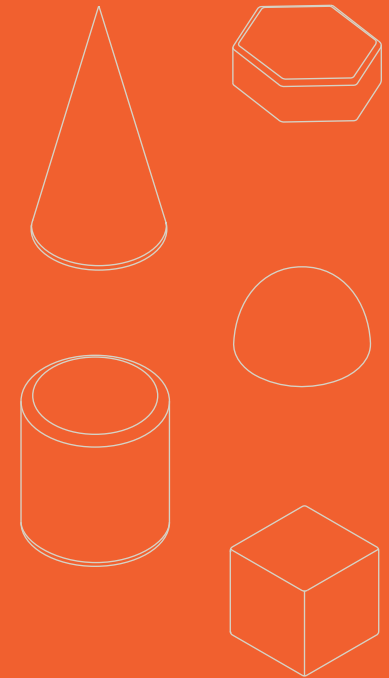
Sustainability - A Given

We don't consider sustainability among our identity values because **we believe it should go without saying in 2037.**

We wanted to design a product for users to explore collaboratively what a service situation might look like, building it from simple materials that people can feel comfortable operating with.
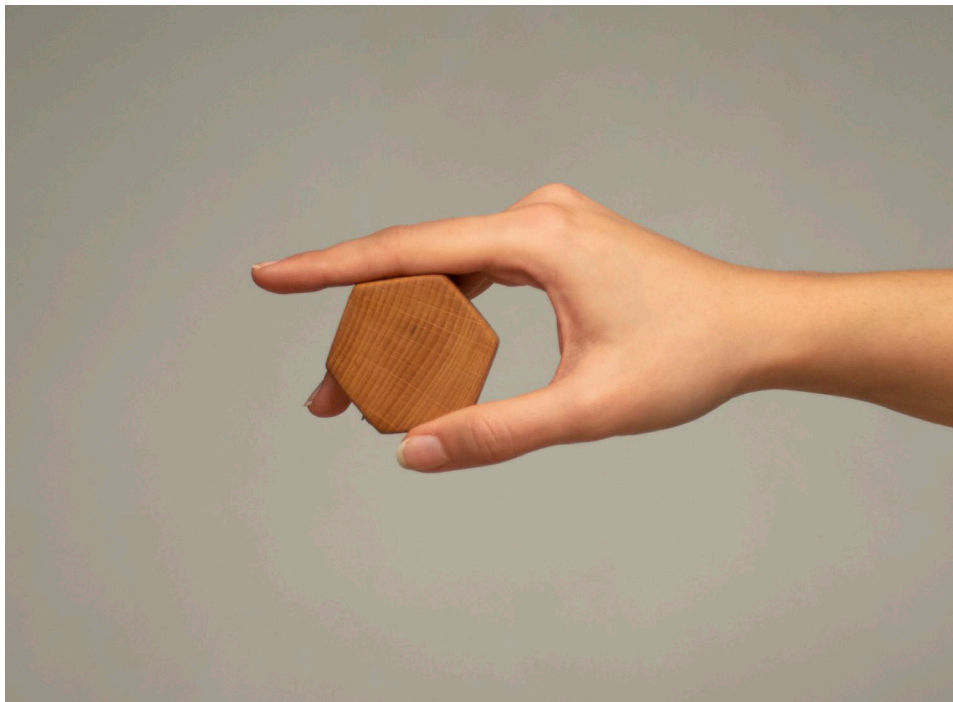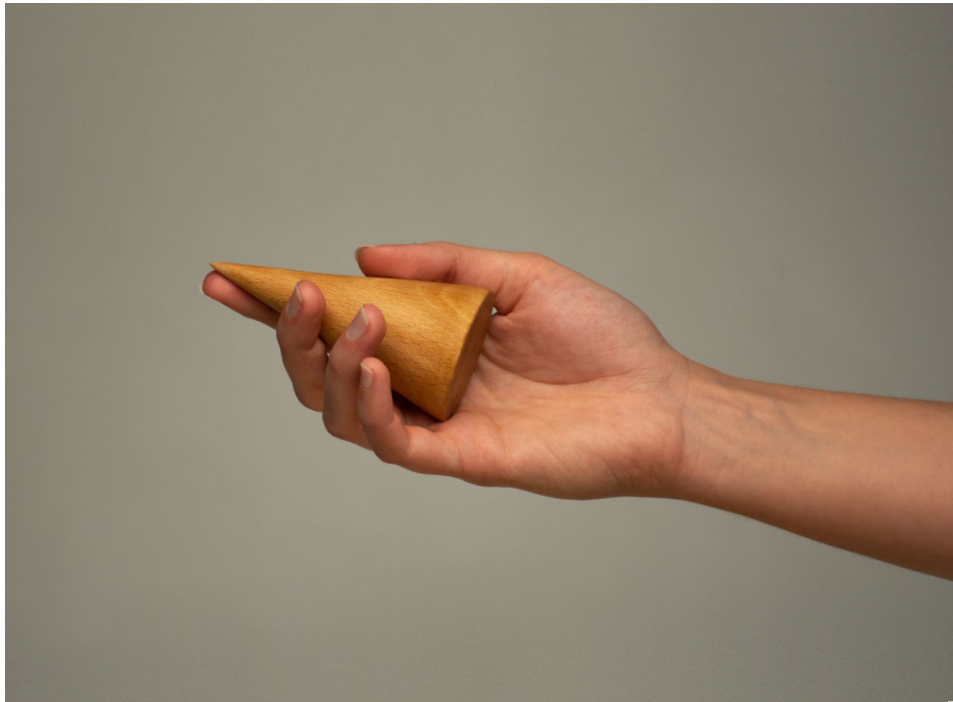
Envisioning Form

We know that in a world awash with ideas, for a new solution to have real value it must be the embodiment of an innovative meaning, which is what is actually being brought and offered to people.

Solutions are the what and how of the existence of a product, but **meanings** explain the why for it, the deep reasons that drive people to give value to the new interpretation.
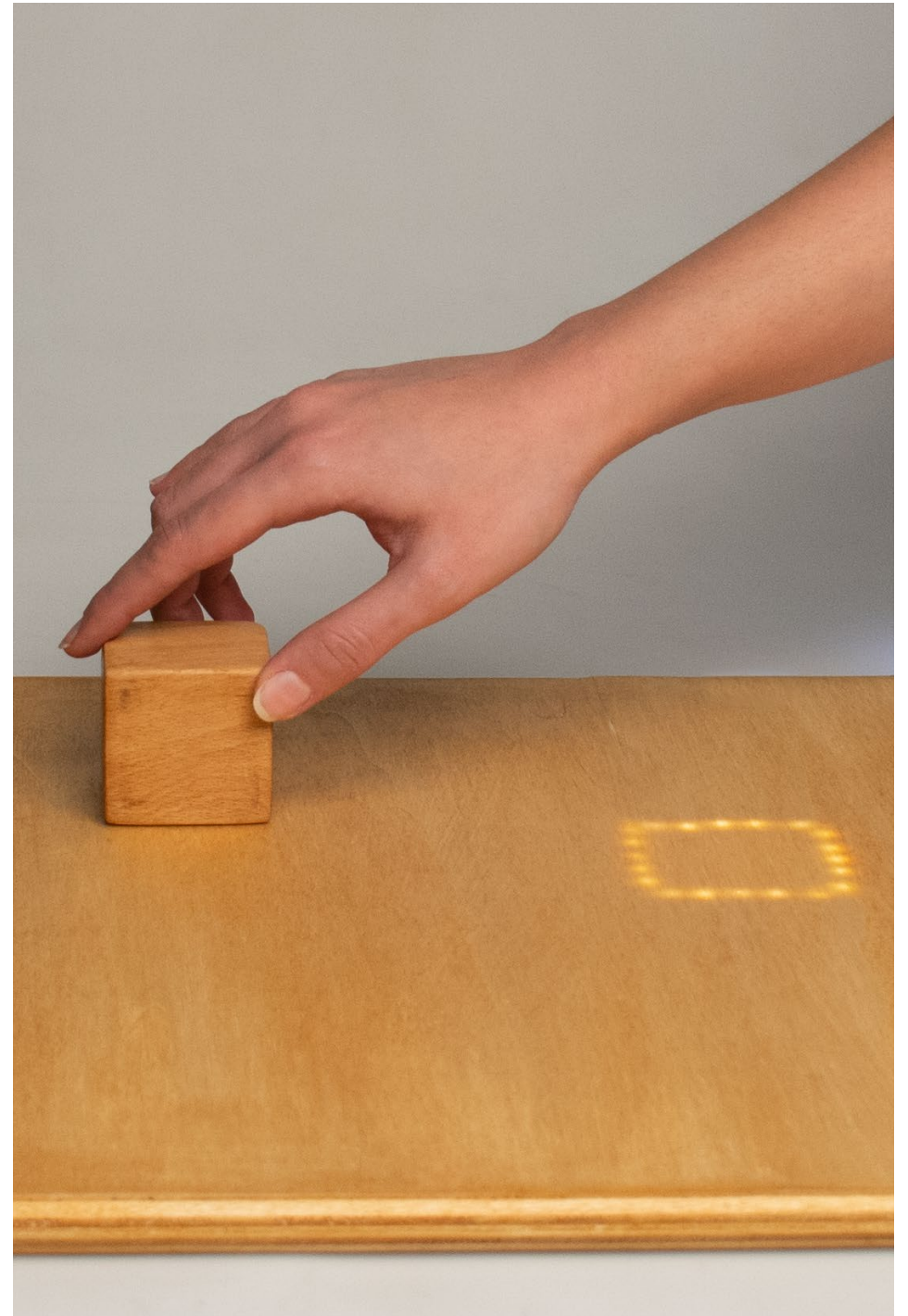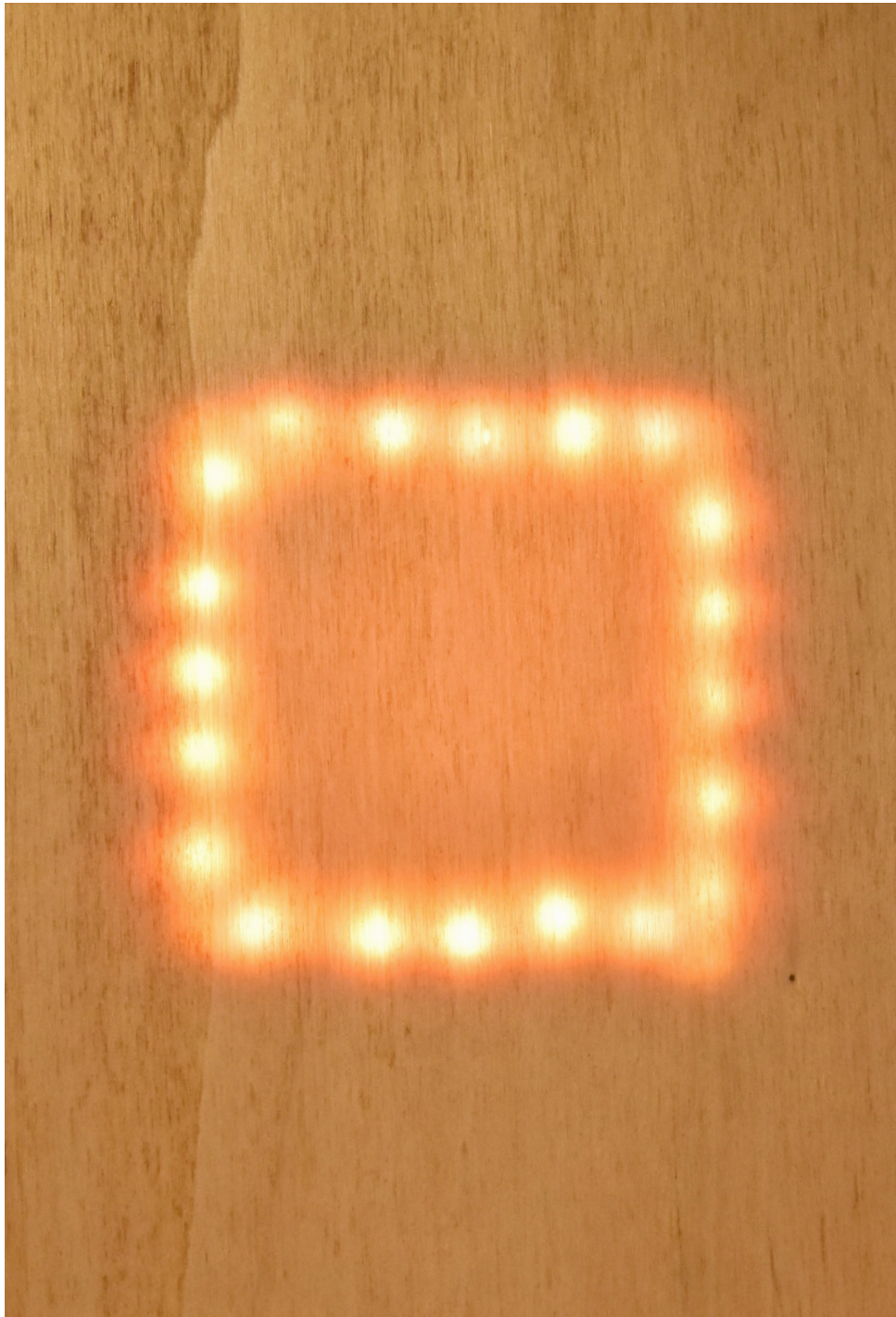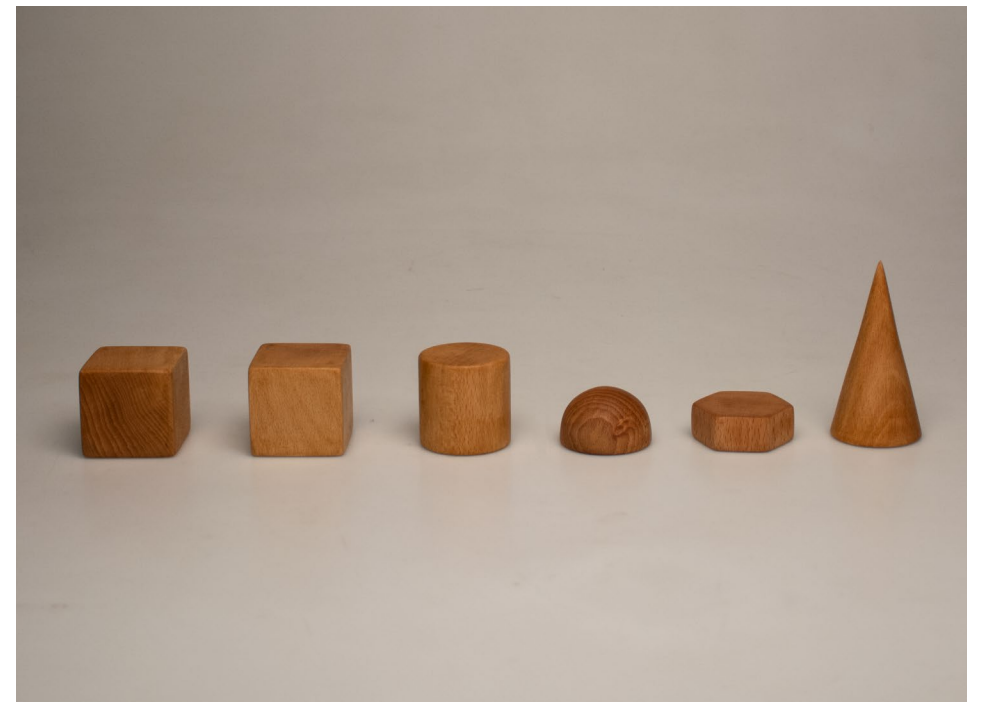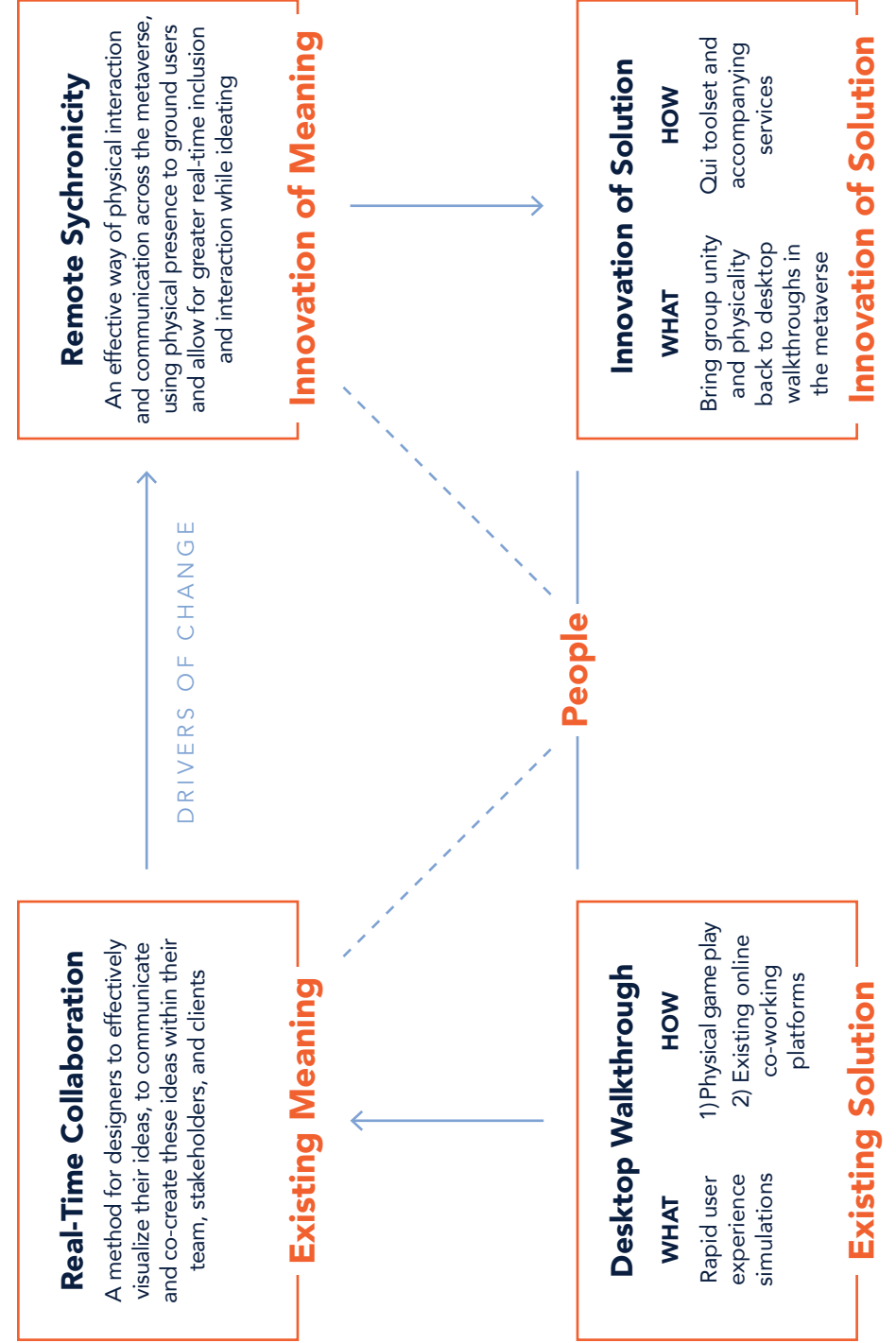
Innovation of meaning gives us a chance to turn the world in a direction that we find more meaningful.

Meanings are the root values

Solutions are touchpoints for users

Drivers of Change

Drivers of change are the cultural or circumstantial factors which elicit a shift which companies/ products must stay ahead of to be relevant. In the case of Qui, these drivers are:

- **Cost of living in major cities and increased focus on work/life balance** pushing more people to work remotely away from the physical location of big offices

- **The introduction of the metaverse and frequency of hybrid offices** (partially in-presence, partially remote) leading to difficulties when remote employees cannot interact with a physical activity

- **Feeling disconnected,** from the physical world when existing in the metaverse for hours per day, and from coworkers who may have never met in real life

Remote Sychronicity

An effective way of physical interaction and communication across the metaverse, using physical presence to ground users and allow for greater real-time inclusion and interaction while ideating

Innovation of Meaning

Innovation of Solution

WHAT

Bring group unity and physicality back to desktop walkthroughs in the metaverse

HOW

Qui toolset and accompanying services

Innovation of Solution

People

DRIVERS OF CHANGE

Real-Time Collaboration

A method for designers to effectively visualize their ideas, to communicate and co-create these ideas within their team, stakeholders, and clients

Existing Meaning

Desktop Walkthrough

WHAT

Rapid user experience simulations

HOW

1) Physical game play
2) Existing online co-working platforms

Existing Solution

image from TiSDD

Existing Meaning

Traditional Desktop Walthrough Methods

I want to explain ideas effectively to my team and rapidly brainstorm together

which enables me to effectively discuss and receive feedback from all stakeholders at critical moments of development

because I want to generate and stronger ideas faster

Innovation of Meaning

Remote Synchronicity

I want to to participate in real-time during desktop walkthroughs in the metaverse, and experience physical presence throughout my day

which enables me to precisely express ideas by moving objects on the play space

because I want to remain involved and physically grounded while we seek out the best solutions to our design challenges

Benefits for Users

For End Users

- Making internships accessible to more people, regardless of economic status or physical abilities

- Improving flexibility of places, liveability, collaborative ownership.

- Increased involvement of disadvantaged youth

- Promoting meaningfulness of experiences: using technology to connect in a healthy and constructive way.

For Companies

- Improving effectiveness of desktop walkthroughs, and therefore of design processes altogether.

- Reinforcing the sense of social and cultural identity: employees and interns feel part of the company team while being immersed in their context

- Fostering cultural diversity of people involved.

- Enhancing collaborative processes.

Product Aims

Qui is used in italian to indicate a place that is close to who is speaking. We can't bring people in the same place, but we want to connect them so that it feels like it. Our goal is having unity of space and time.

We also want to provide tools to have more control over time, and while it is not possible to travel in the future, we want to give the option to take more awareness in looking back and living past design choices in the present.

Qui introduces a simple and interactive experience that teaches and enables interns to conduct remote desktop walkthroughs using physical blocks. This also gives the opportunity to companies to consider applicants from remote places, as distance won't be a burden for the experience on either parts. Companies will be facilitated by the service as it will guide users through introduction phases to the

pratice that would usually be covered by company empoyees.

At the same time this results in people applying for internships to be able to consider a broader range of choice and to be assisted by the service.

This establishes a new paradigm for conducting internships: it takes a practice typically only feasible if attending from the same place, and makes a remote interaction tangible.

The Qui toolset is designed to be used in office and sent to remote users. Interns can use it throughout the duration of their position. Once it is over, they have to send the toolset back to the hosting company. The user is provided with Qui services by the company for the temporary period of them being part of it, consequently increasing participation and sense of belonging.

Qui was in fact also designed as a platform called Time Hop. It enables employees and interns to access a library of historical records of past desktop walkthroughs they've been part of. This introduces the possibility to pause and resume the process, while doing something else in the meantime, or simply get back to working on them later in time.

Time Hop also gives access to a Sharing Platform, where users can share and store finalised Desktop Walkthroughs, as well as view the work other people of the Qui network have decided to publish, in order to spread this kind of knowledge about design processes and collaborate on a wider level.

The innovation represented by Qui would foster a fair distribution of social, economic and environmental resources, as well as increasing the variety of spaces, goods and services available for fullfilling the diversity of everyday lives.

Testing Prototypes

What We Created, and What We Tested.

Research Application

Coming out of weeks of research, we determined a couple parameters for our solution moving forward. These things we knew as true

- The current trajectory of the **metaverse lacks physical presence**

- **Internships provide subconscious lessons** which cannot be fully replicated in classroom settings

- **Subconscious learning is easier to achieve when touch sense**, and the active mind is engaged elsewhere

- **Unconvincing virtual** reality can serve as a distraction or hindrance

- Desktop walkthroughs aren't functional without **simultaneous physical interactions**

What Should we Test?

1 **Board Shape**

Should it be modular? Should it be a static size?

2 **Block Size**

Relative to the board, how big or small should blocks be? How big or small should blocks feel in the user's hand?

3 **Block Texture**

Is this important? Will users appreciate it?

Block Texture / Size

From here, we knew we wanted to bring physicality to the metaverse for the betterment of subconscious learning and inclusion of interns leveraging it's remote capabilities, but there were multiple ways we could go about introducing the sense of tuch to these interactions. We wondered if it was just the ability to move an object which the user could hold which we wanted to provide, or could more information be given through tactile sensory stimulation of textures. Would the introduction of texture bring more to the believability of the metaverse? Would this engagement bring more to the intern experience?

We decided that metal, plastic, and fabric textures would be a good place to start. Using cardboard, tin foil, fabric, and repurposed plastic bags we created a box, a rectangle, and a triangle of **differing sizes in each material.** We used our current favorite board for our user testing, which at the time was the modular grid of hexagons. We found three students with previous internship experience, and after giving them a brief overview of our product's intended use (without revealing that we were testing their response to the textures).

We asked them to make up an example walkthrough scenario to walk us through. One member of our team introduced them to the experiment, one recorded their answers to probing and bodily communication, and one took photos/videos. After each participant created their scenario and described it to us, we asked further about why they chose each block; was it the size, or the texture, or the shape which brought about their decisions? After recording their detailed responses, we asked them to rank the following three qualities in order of importance in their decision making process when selecting representative blocks for their made up walkthroughs.

Our Block Test Users

Claudia Caselli Current Interior Design Bachelor's Student 23 years old	**Elena Secchi** Interior Design Bachelor's Current PSSD Master's Student 23 years old
Aylin Pacaci Industrial Design Bachelor's Current PSSD Master's Student 24 years old	

Results

Shape was the leading factor behind our test user's decision making, followed by texture, and finishing with size. We knew from our own experience with desktop walkthroughs that size would be important in relation to to the size of the workspace (which was at this time still modular), but when probing our users they said that **while they enjoyed the texture, it wasn't the reason they selected some blocks over others.** It was just an enjoyable sensation as they worked. From this, we decided to finish off our final product with sanding and oiling so that they would feel smooth and pleasant to the touch, but texture was no longer a leading feature of our product.

Claudia Casello
1. Shape
2. Texture
3. Size

Aylin Pacaci
1. Size
2. Shape
3. Texture

Elena Secchi
1. Shape
2. Texture
3. Size

Board Shape

Through everything, we wanted to be conscious of the intern experience. Yes, this tool would benefit all employees in a hybrid metaverse office, but our hearts stay with the realities of a student intern's life. Our team, and all of our peers, can relate to the life of a broke university student: you don't have much room in your living space at this point of your life, and we wanted to be accommodating of this factuality when designing for them, especially if the remote internship model turned their living space into their working space as well. Our objects should be able to be stored away during non-working hours, and we thought it could be beneficial if the work surface could be modular to adjust to any living situation a student may find themselves in. We decided to explore the possibility of a workspace which fit together in a tessellation fashion. After testing squares, triangles, hexagons, and more through sketches, our advisors expressed strong opinons that the board ought to be one solid form. With such a complicated function, they argues, the visual qualities of our product ought to be as simple as possible. Additionally, when creating the real working prototypes of this product, it could be more difficult for the light interaction functions to operate if all the computer mechanics had to fit into such small pieces. We ultimately agreed with them, after rounds of cardboard prototyping and digital rendering, and went for one solid board as the surface of our metaverse desktop walkthroughs.
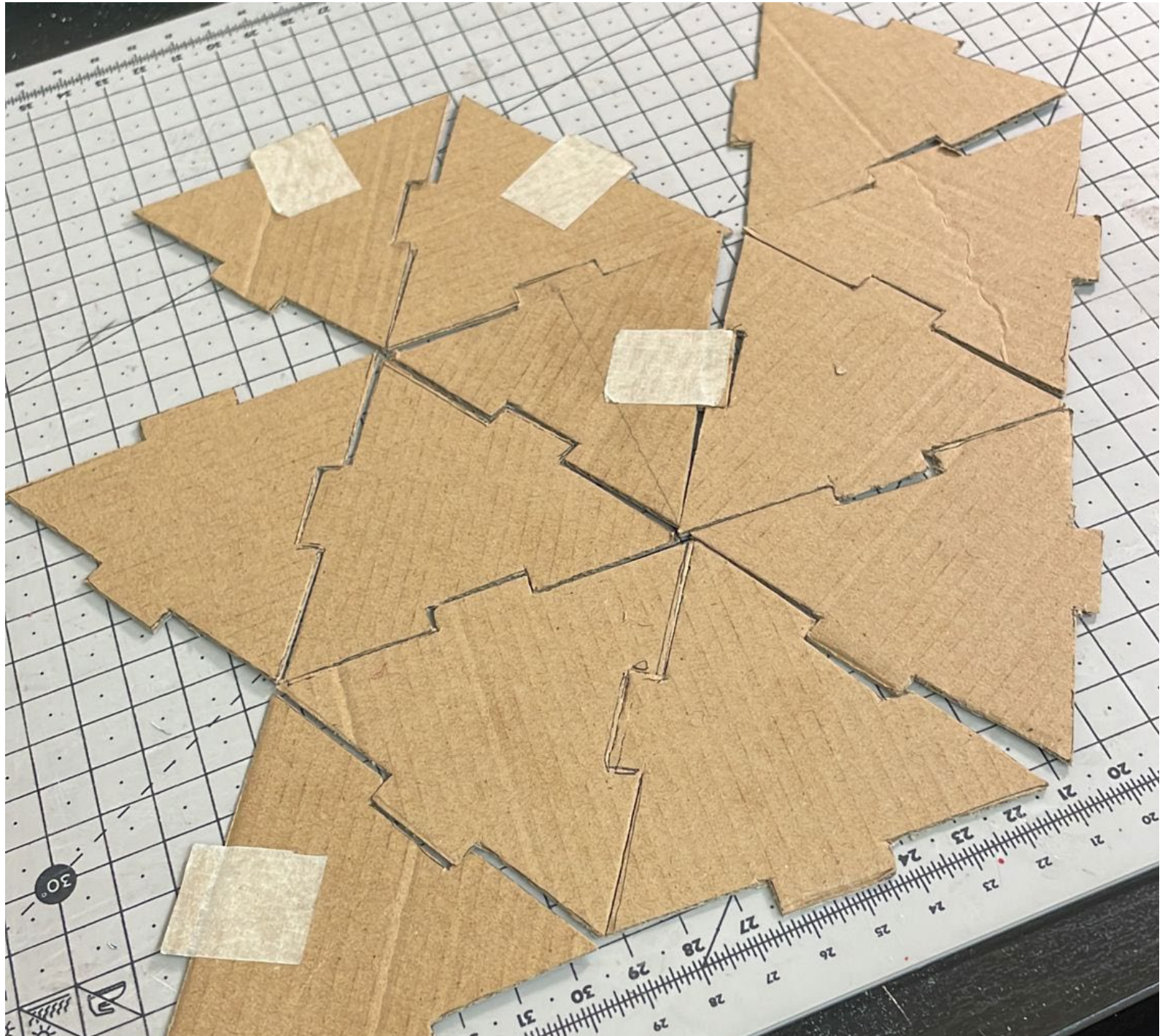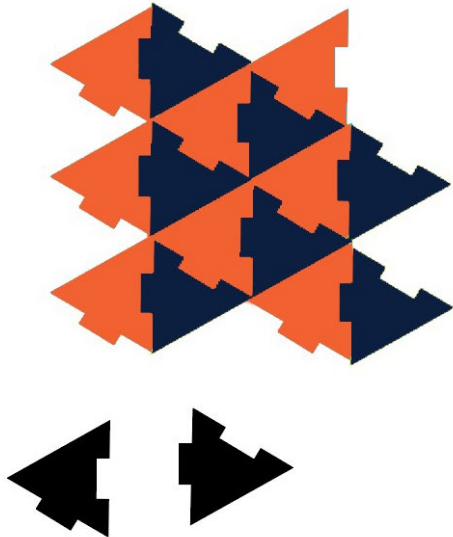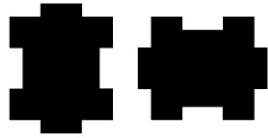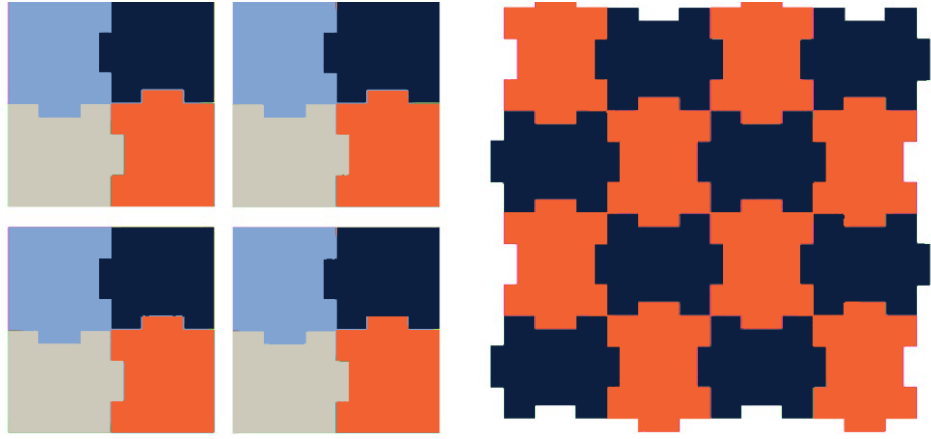
Materials

Choices and Sourcing.

Lighting the Board

We first had to decide the thinness required of our board for light to shine through. We originally thought a 4mm wide board would suffice, with the lights adhered to the bottom, but we were dissatisfied with how this would feel to the hands. We wanted the board to feel heavier, understanding that this was just a representational model of how our real product would be. The real product would be filled with complex computer systems, and would need to be thicker, and would result in being heavier. So, after conferring with our advisory board, **we decided to rely on finding a CNC (computer numerical controlled) machine** facility somewhere in Milan which could precisely carve our board to create a pocket for our light to be placed within, only 2mm from the surface for optimal glow. The full board was 15mm deep in the end.

We tried many ways of creating shapes to fit our blocks using lights. We began with Arduino, which Eline had experience working with before. When this proved to be the incorrect choice, we moved onto LED strips sources in chinatown and Porta Vittoria. These seemed promising at first, but were ultimately limiting in important ways. It was just after the holidays, and we were feeling discouraged when a stroke of inspiration occurred as Morgan was taking her Christmas decorations down: **bendable wire Christmas lights** could solve many of our problems.

| LIGHTING OPTIONS		
	PROS	**CONS**
ARDUINO	• Already owned, already sourced • Experience working with it • Could be turned on/off remotely for demonstration	• Could only support pre-made LED shapes, limiting our ability to choose the dimensions of the blocks
LED STRIPS	• Very bright and visible • Could be turned on/off remotely for demonstration	• Corner shapes were strange and inconsistent when bent • Circles wouldn't be possible • We couldn't manipulate the distance between dots of light • All strips were 5+ meters long, much more than we needed • Most were multicolored, which was not desireable
WIRE CHRISTMAS LIGHTS	• Already owned by Morgan and Eline, already sourced • The distance between lights was similar to LED Strips, however, these were flexible and could be bent/coiled to bring them nearer • Would allow for control over size of blocks	• When coiling for desired size, there were excess lights left over which would also shine through the board in places we did not intend. • This could be solved by covering those lights with electrical tape

Coiling and Layering the Wire Christmas Lights

By coiling the wire christmas lights and wrapping them around themselves, we were able to have much more control over the exact size, the shapes we were able to create, and distribution of space between lights when forming said shapes.
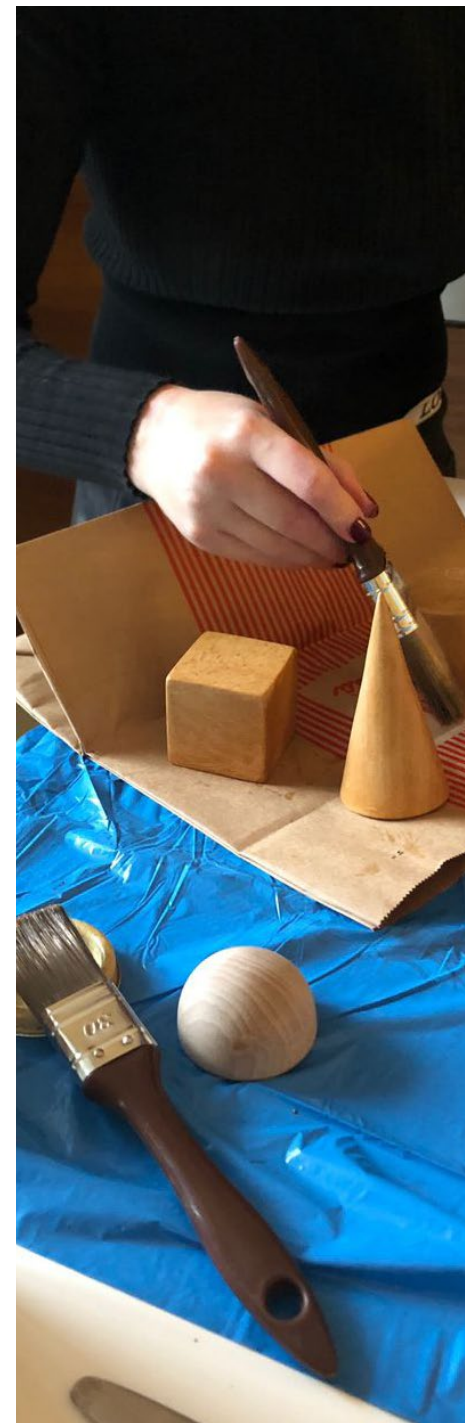
Wood

A requirement of this project was that the primary material be plywood. Plywood is affordable, relatively sustainable, and highly versatile. But selecting the right type of wood, at what thickness and quality for our needs, was a journey.
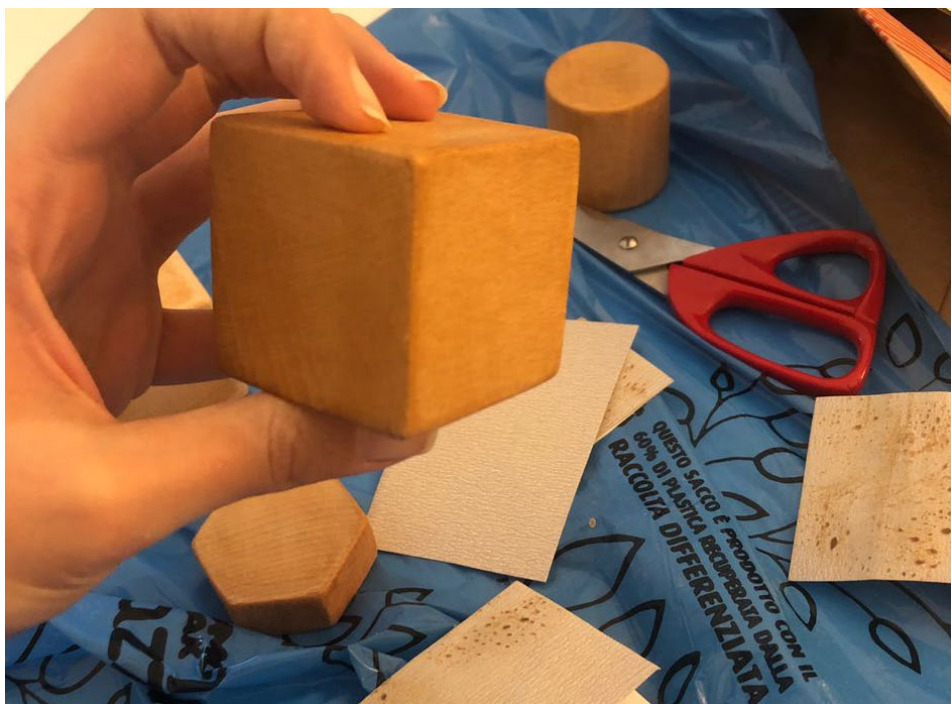
Beautifying Blocks

We sought out ready-made wooden Montessori bocks, because we were advised that hand carving these could prove difficult and expensive. While we were willing to put in the time and effort to make the blocks beautiful, we (like our target audience) couldn't afford large blocks of solid wood to carve if we risked making mistakes, and we were advised that to glue many layers of plywood together and carve from that would end up looking messy and we would sacrifice the clean and beautiful aesthetic we were striving for. We first purchased some painted blocks from Flying Tiger and intended to sand them down and repaint or stain them, but we ultimately decided that they were too small in relation to our board. We searched further for wooden Montessori blocks online, but any we found were pricey or not the shapes we hoped for. We went to milan's Chinatown, but were still unsuccessful in sourcing the blocks, or the desired wood for our board. Eventually, we discovered a store called Leroy Merlin, which was an hour and a half journey one way from Milan. The journey was worth the distance, because here we found bood for our board, and the perfect blocks to base our product on. The blocks were too pale for our desired outcome, and their texture could be improved; but we had found the foundation upon which we could build our model.

We purchased sandpaper, varnish, and oil, to beautiful the wood we had sourced. First we sanded all of the blocks with 120 grain sandpaper, then 220 grain, then 320 grain. At this point, we varnished the wood with an unoiled varnish to color it. We then sourced more specialized sandpaper from the Polimi Protoshop, we used 400 grain sandpaper and then oiled the blocks, allowing them to dry for one day. Then we sanded with 600 grain, and again coated it with oil which we allowed to dry for one full day. Finally, we (lightly) sanded with 1200 grain sandpaper, added a final coat of oil, and one final layer of colored varnish.

Building the Board

Our team began by searching Brico Center, in downtown Milan for 4mm wood, but found the selection was too small, limiting our options in wood type and size, which we had not fully determined yet. We asked around for carpentry shops, but in the end, Leroy Merlin was the right place for this too.

Once we had sourced the material, we chose the aesthetic qualities of the board.

Filets: on all vertical and horizontal corners, so it all feels smooth to the touch

Color: We want the board to be lighter than the toys to create visual contrast between the two

Surface: Varnish once, oil twice
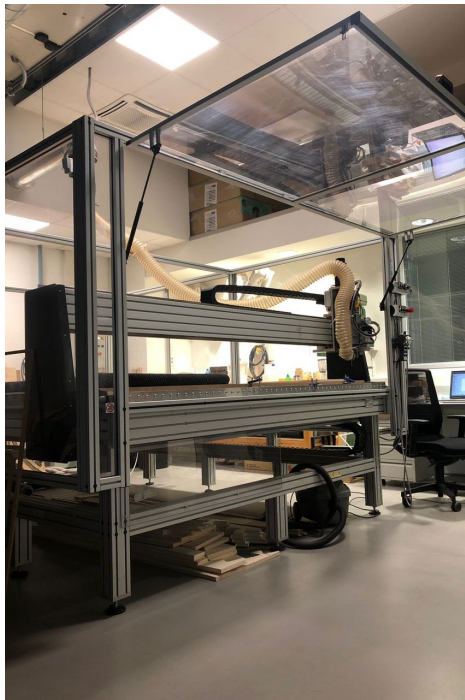
Final Material Sources

Batteries

Essalunga

Blocks

Leroy Merlin

Wood for Board

Leroy Merlin

Lights

Flying Tiger and Action

Using Unity

UnityAR and Vuforia

Our teammate Annie (Yaan Wei) searched for tutorials on the internet and came across an imagetracking video, using the online platform VUFORIA. She succeed in image tracking using one afternoon, by performing tests
in Unity. With an example image (a US dollar on her phone screen) and a database of the recognition targets, she established that she could let Unity easily track the flat example image and transmit the visuals as something else.

But since our concept is to track geometric blocks and display them as other objects in metaverse AR/VR, it was necessary to go in advance in Unity. Using tutorials from the internet and introducing Vuforia scanning app on phone, Annie developed a method to scan original 3D objects.
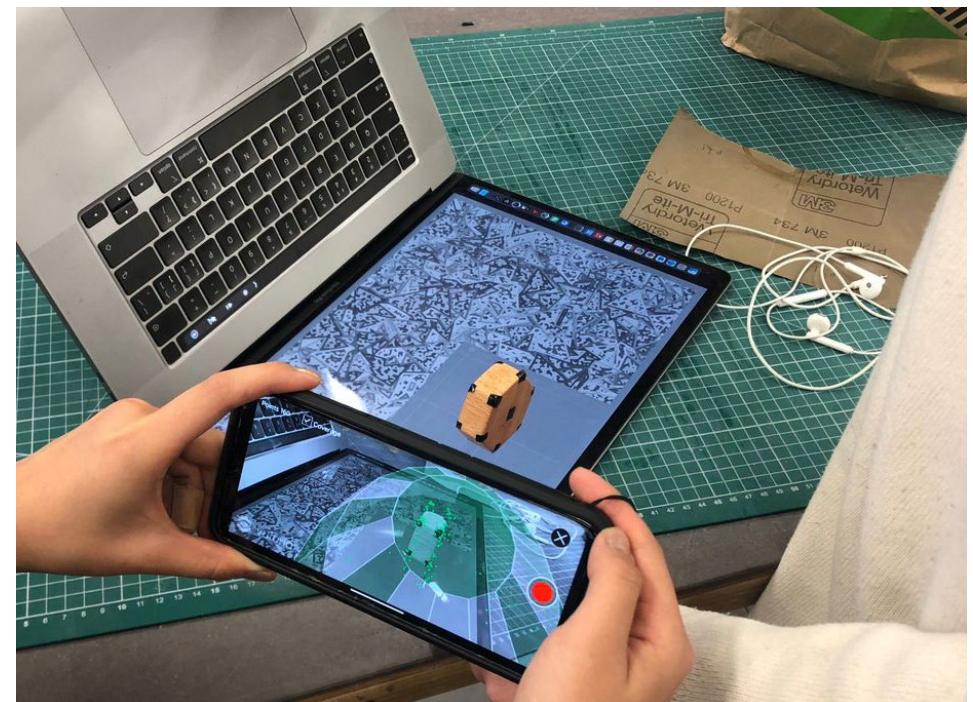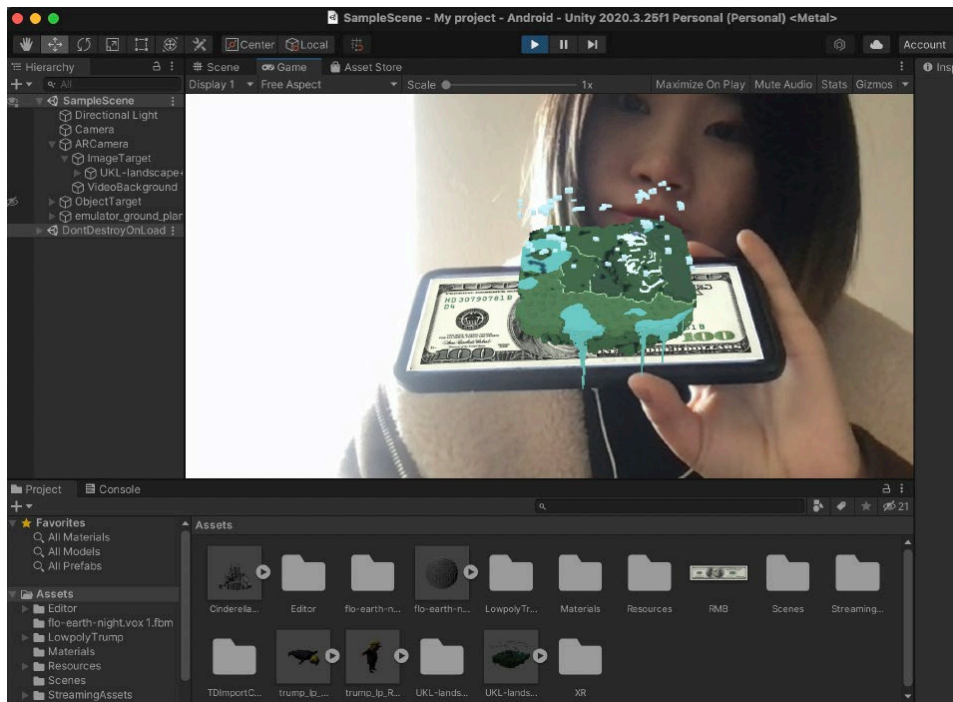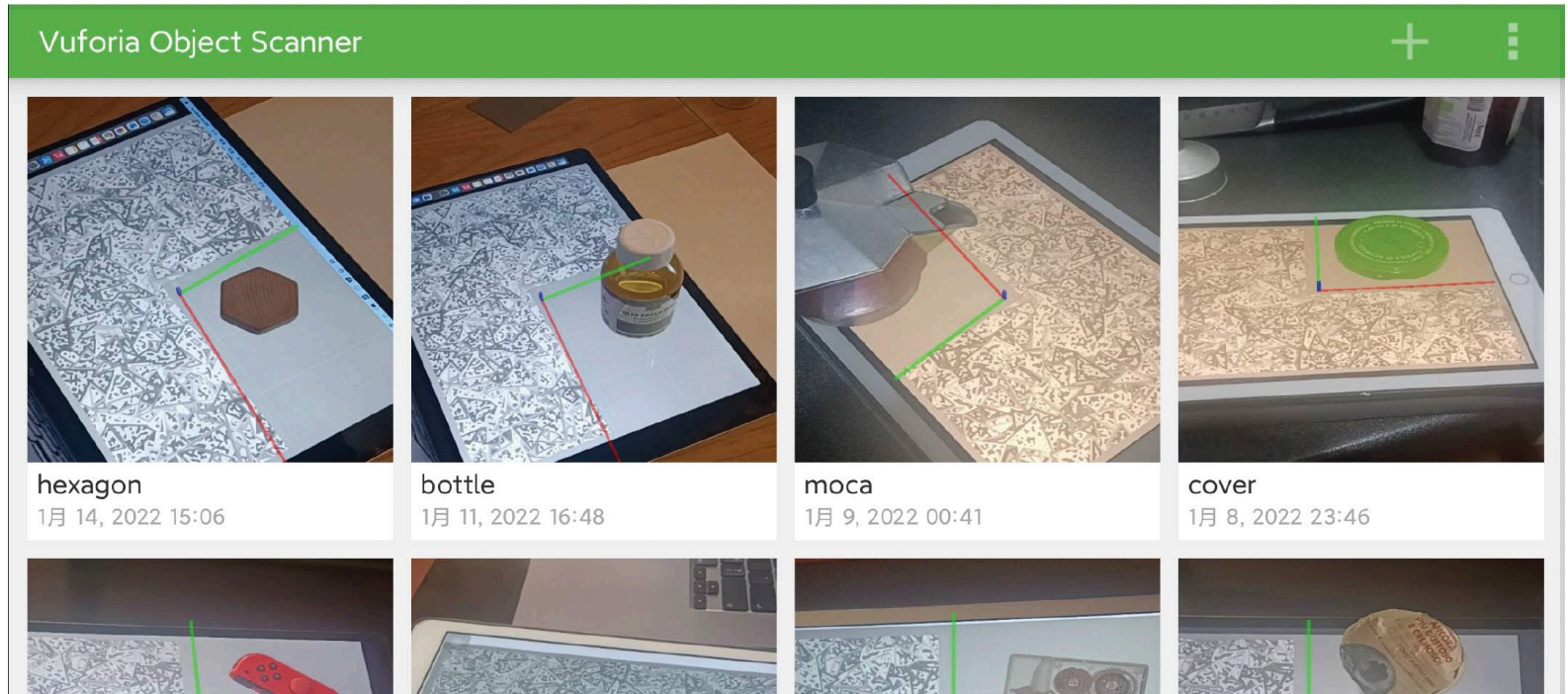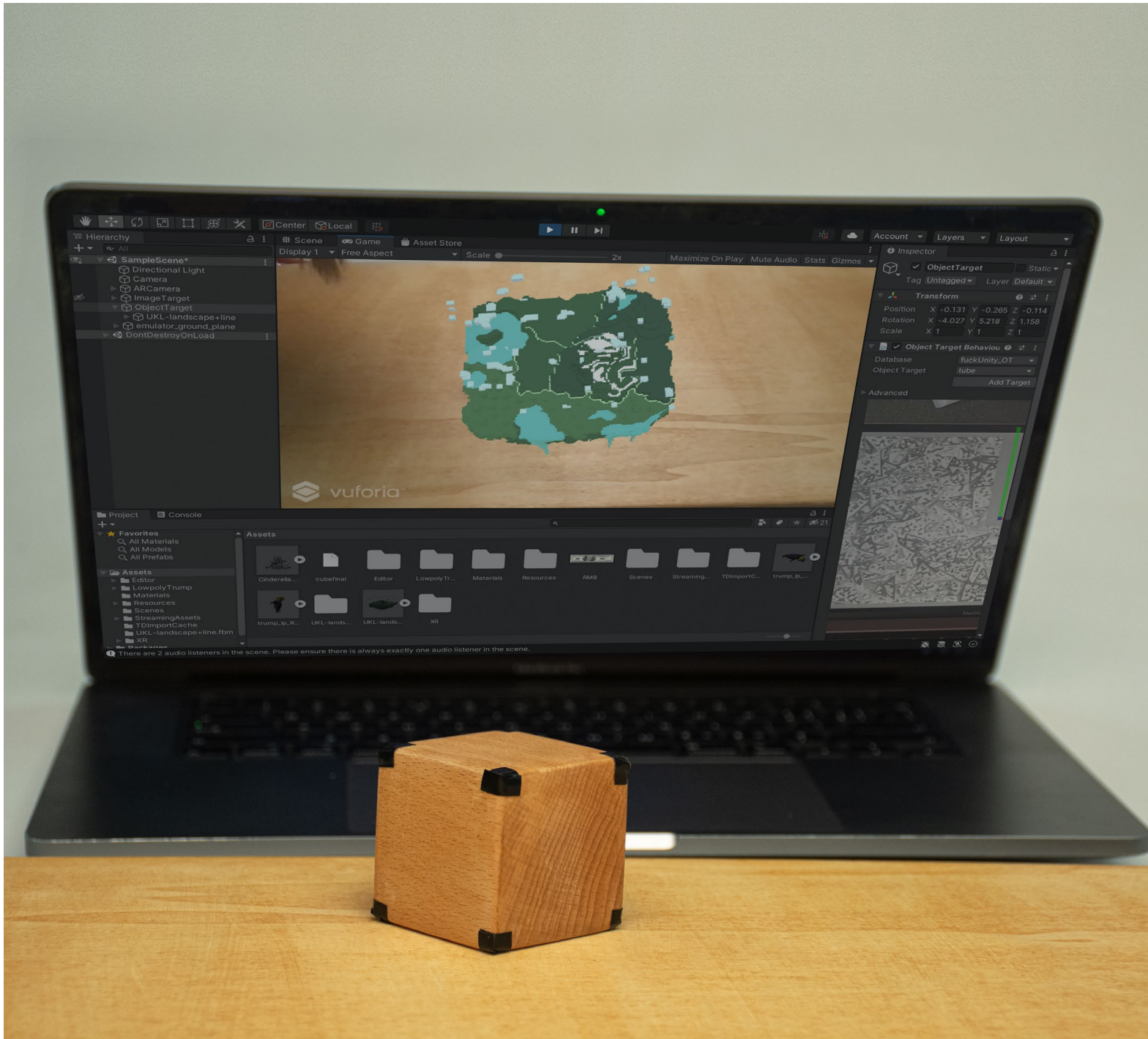
Tracking 3D Items in Unity

The leap from 2D tracking to 3D tracking was not easy. The objects recognition demands complex surface of objects in order to recognize the item, yet our objects are too clean and simple to be perfectly scanned. Annie spent couple of nights debugging and succeed nothing at first. However, with perseverance and endless effort, Annie succeed first in scanning a pink hand cream tube, an item or similar size but more complex surface patterns than our blocks. The whole team was thrilled. This is when Annie realized that the key to our success may be in adding trackable patterns to the surface of our block. By adding small points on the corners of our blocks using black electrical tape, Annie was able to scan the blocks into Unity so they could be tracked.

60.00

144.00

59.00

R30.00

5.00

127.50

147.50

13.00

600.00

R60.00

400.00

R5.00

15.00

SCALE 1:6

94

95

100.00

R2.00

Ø 50.00

SCALE 1:1

52.16

29.70

R2.00

27.69

59.38

Ø 50.00

50.00

Ø 50.00

SCALE 1:1

SCALE 1:1

30.00

R2.00

Ø 50.00

50.00

50.00
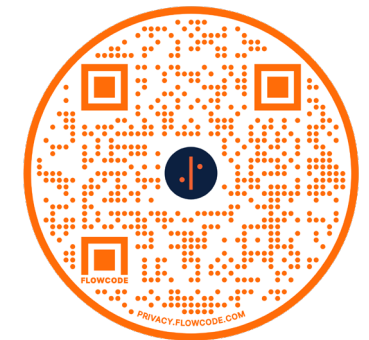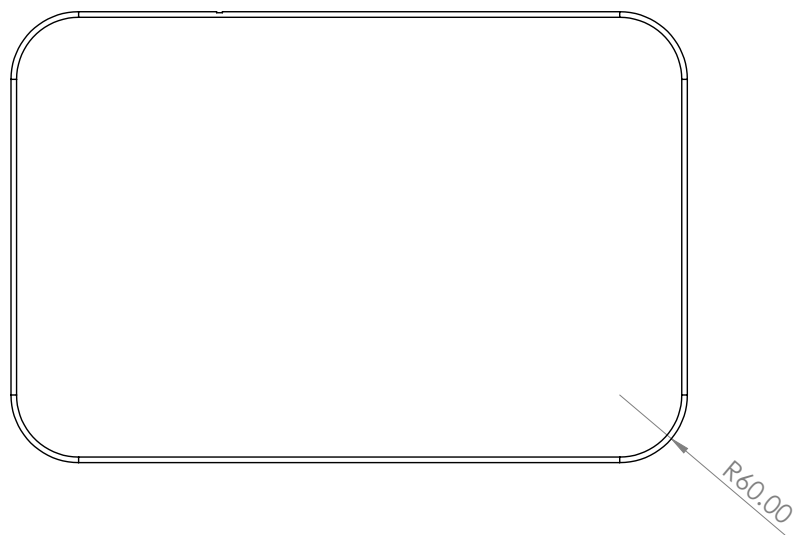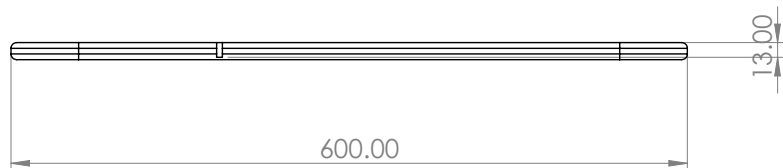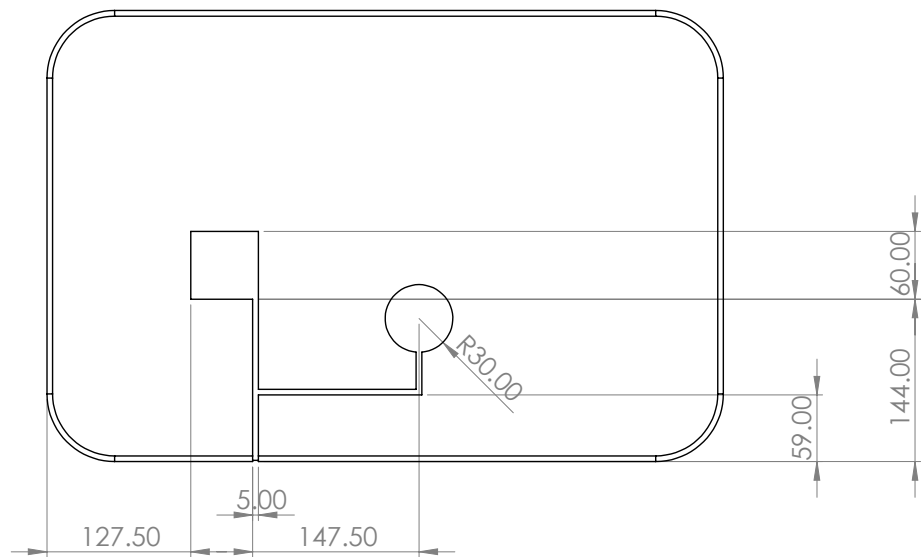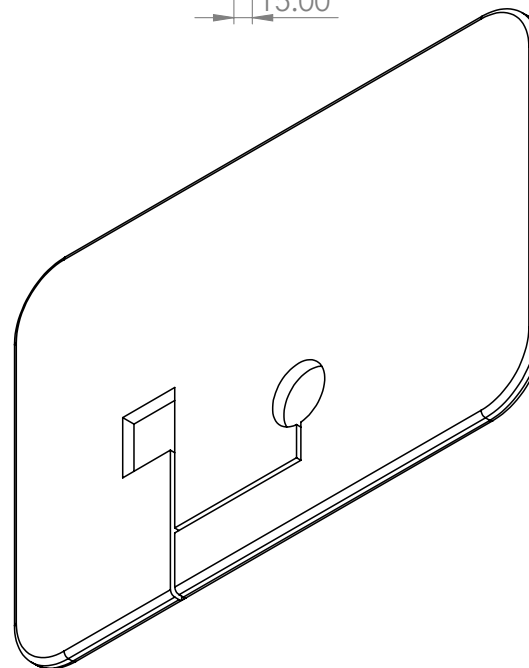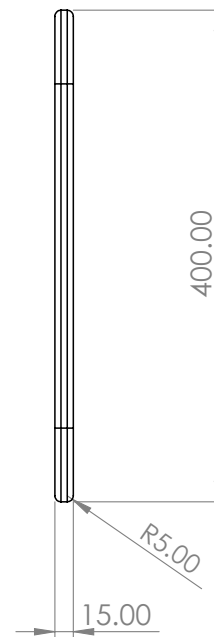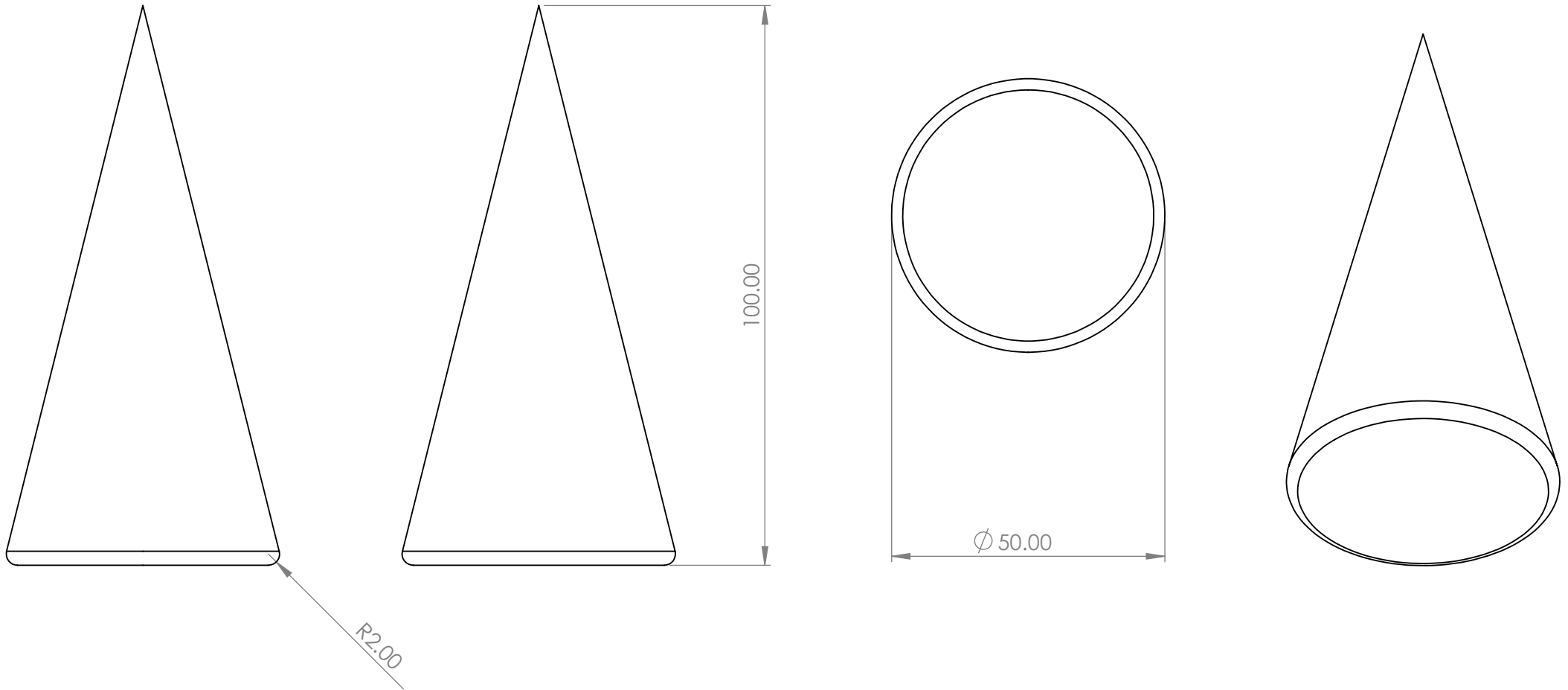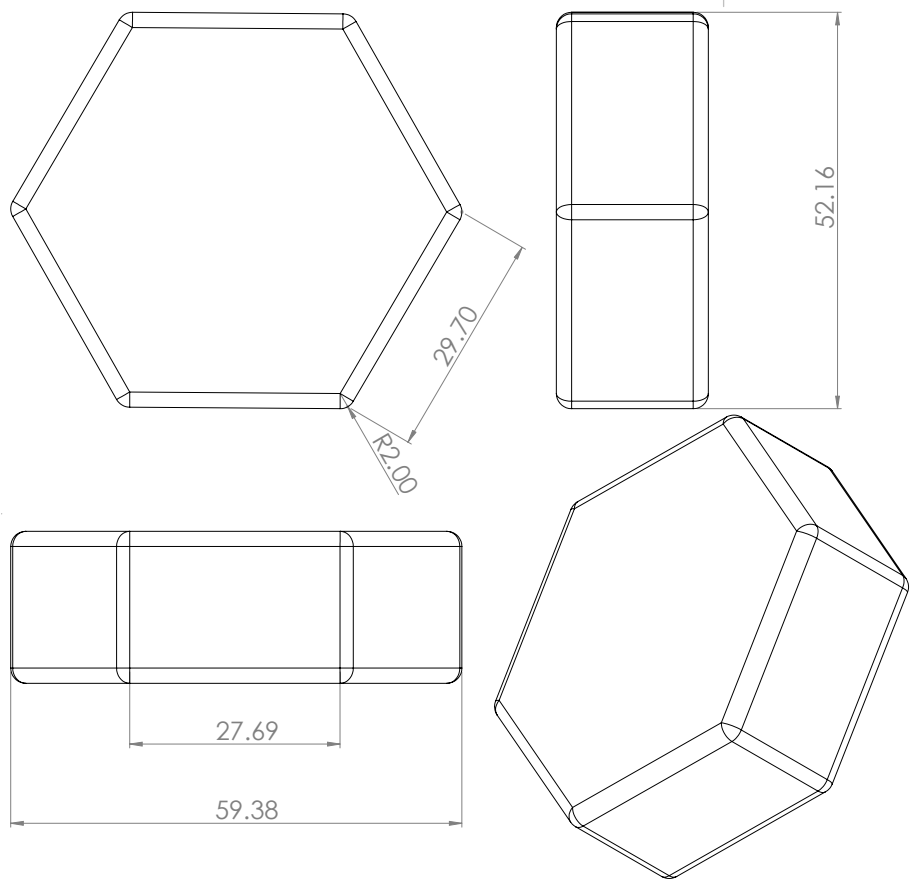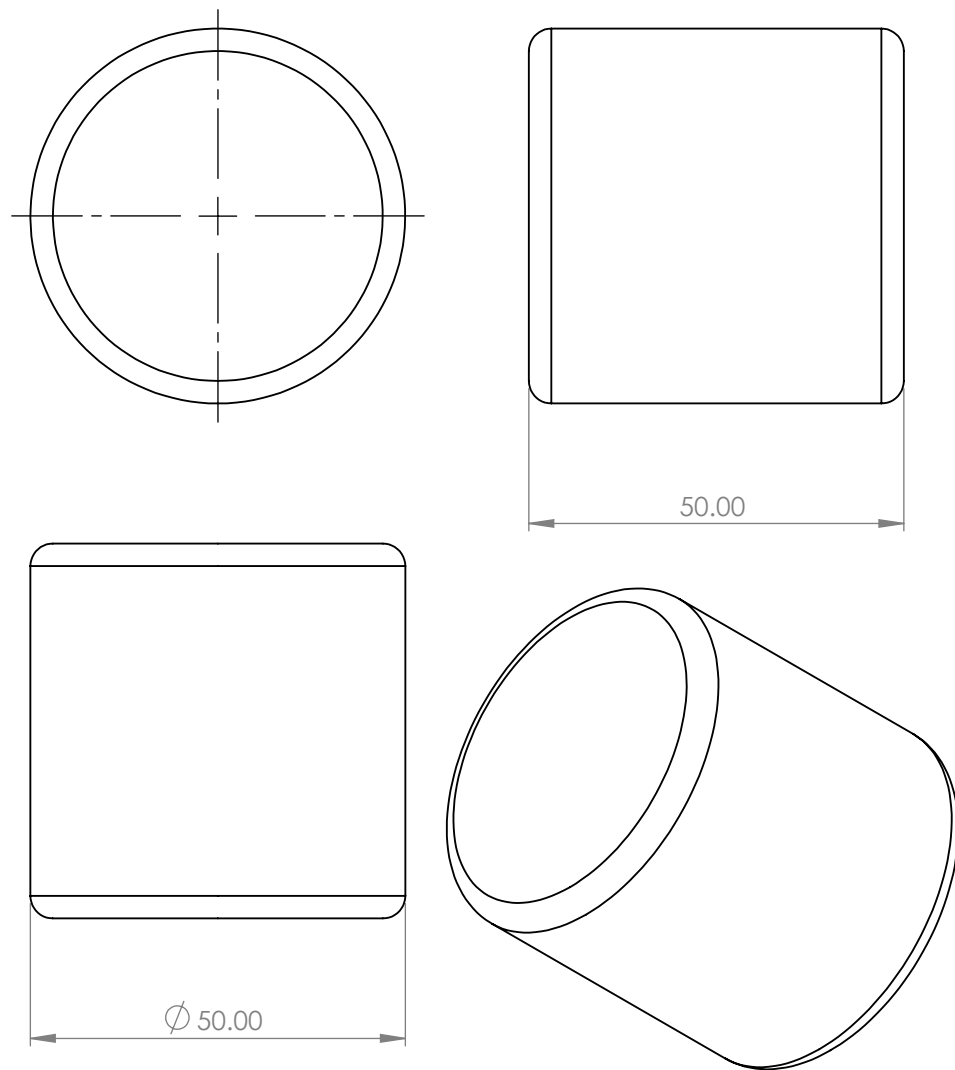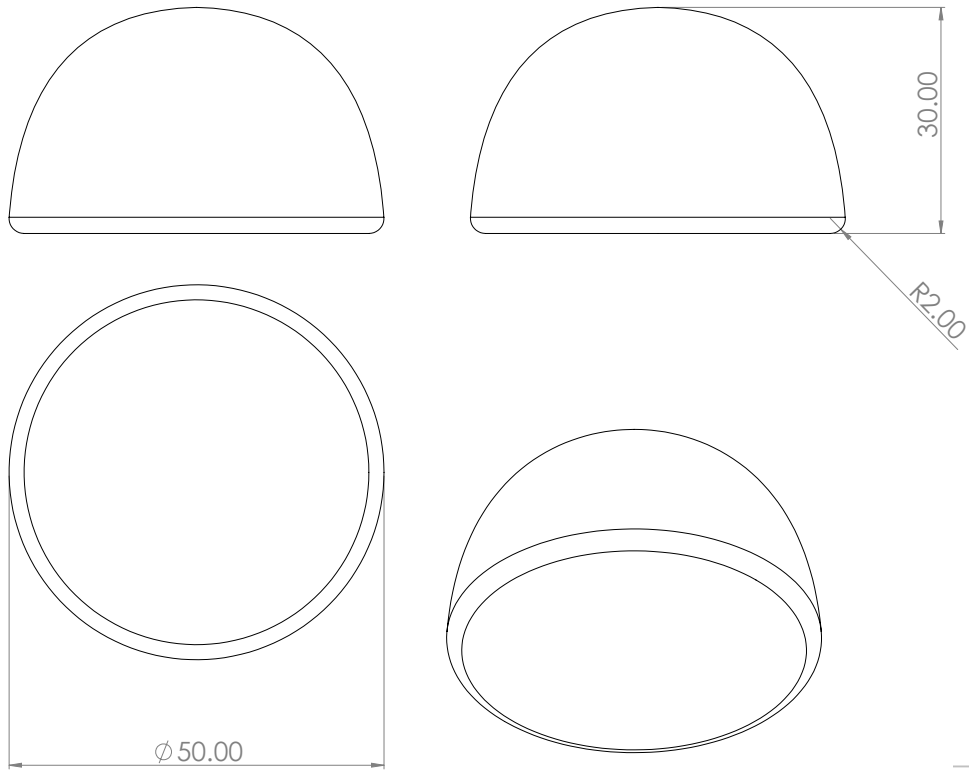
SCALE 1:1

100

SCALE 1:1

101

R2.00
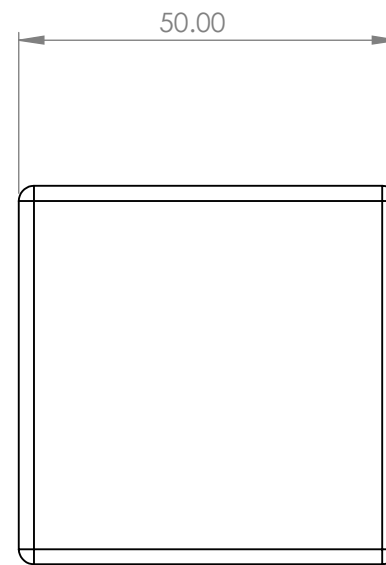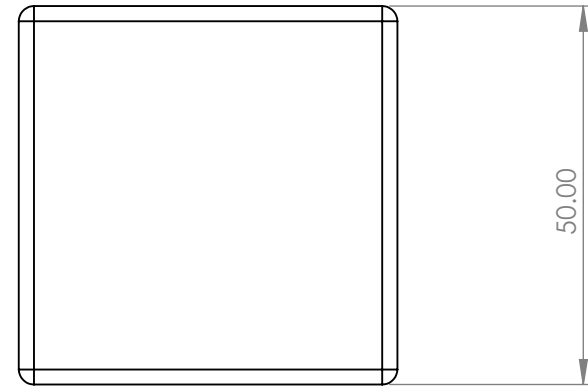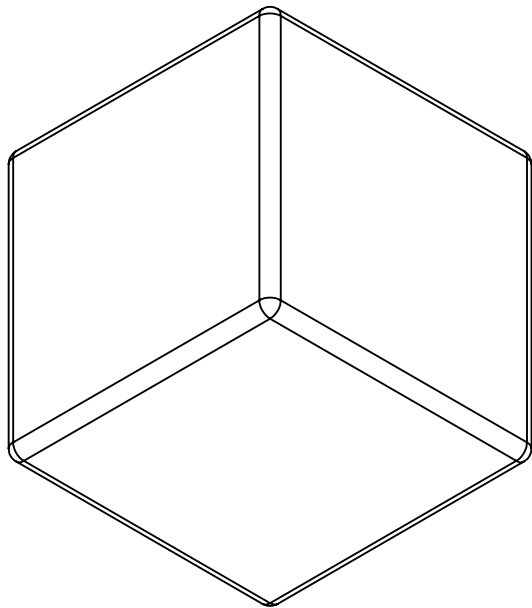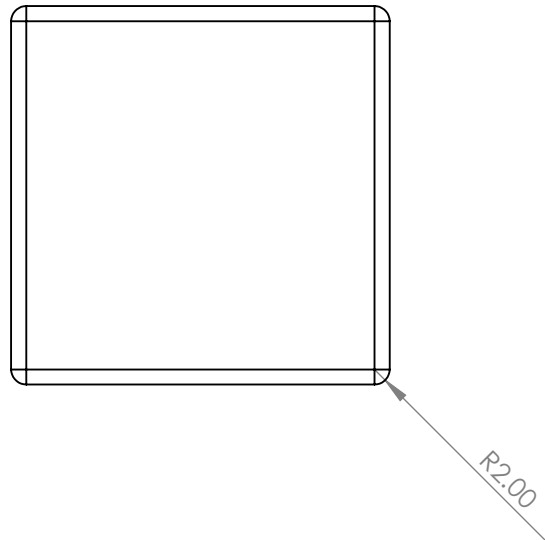
SCALE 1:1

5

branding

Qui.
Simple Connectivity

Brand Name

Hello, we are _____.

Introducing: Qui

Qui was conceived in Italy, where we took inspiration for its name - "qui", indeed, in italian means "here." We wanted the name to sound agile and adaptive, easy to pronounce and to remember.

Qui was born because we believe in the importance of Desktop Walkthroughs for the ability to capture intangible, temporal, and dynamic aspects of service. We wanted to collocate the device in a dimension that bridges between the Metaverse and reality, and to reflect this, together with its identity, in the name.

QUi.

Semiotics

From phono-centric to opto-centric

In semiotic, a brand logo could be either phono-centric or opto-centric - like the classical case studies of IBM's and Apple's logos - the former reminded viewers of sound using alphabetical letters, whereas the latter engaging with visuals displaying the shape of an apple.

While phono-centric is often referred as rational, opto-centric being associated with perceptual, we expected our logo to contain both features: the letters constituting the logo should evoke a pleasant sound, and altogether assemble an intriguing shape, giving the composition a good sound and an impressive look - and from there, we have come up with the idea of Qui.

Figurative Reading

Speaking in figurative content, on the one hand, Qui derives from latin and could be found in multiple language systems, namely Aragonese, Catalan, French and Italian - appearing as suffix and prefix, or being a word itself.

It stands for [who/whom] in Latin system and [here] in Italian. It has the ability of arousing enunciation process for people with a multitude of language backgrounds; yet the interpretations of which varies from person to person, in that creates intriguing intuitive meaning effects.

It can for instance be also read as "Key", a concept which we pleasantly associate our brand with.

Plastic Reading

From the plastic reading point of view, on the other hand, the Qui logo possesses more flexibility in Interpreting.

Topologically speaking, the relative position of the 2 dots and a line in the middle is the representative of the actual using scenario: both sides taking part in the table walkthrough shares the scene and senses at the same time, with Qui being the bridge. Qui's just like a mirror, which transfers sensory feelings seamlessly side to side.

Eidetically speaking, Qui contains the most basic and origin geometric constitution: circle, lines, curve, dots. These meta-shapes altogether form the world of geometry; whereas our brand, Qui, stands for strong and reliable authenticity - it's the starting point to endless possibilities.

Chromatically speaking, the cold-warm color contrast of 2 main tones, blue versus orange, indicates the two seemingly contrary impressions: the cold yet smart technology versus the heart-warming human nature. It looks a bit ambivalent indeed, yet that is the subtle balance the brand is proposing: it's effective, but at the same time empathetic - it's a humane technology.

QUi.
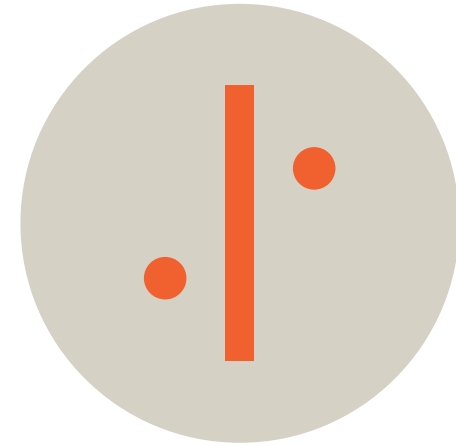
Simple Connectivity

Logo Design and Guides

When We Leave Our Mark.

Brand Mark

Logotype

QUi.

Logo Usage

Brand Mark

The two-tone Brand Mark can be positioned on white background or on the complementary colour of the three-colours primary palette.
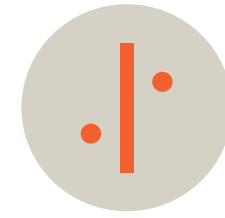
Logotype

The Logotype can only be one solid color, and cannot be stretched or distorted

Both

Both the Logotype and the Brand Mark can be used separately, or they can be stacked by putting the latter above the brand name, optionally interspersed with the slogan. Logos can optionally be applied as an overlay at 50% opacity.

PRIMARY   SECONDARY
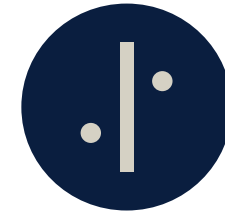
MONOTONE
KNOCK-OUT

MONOTONE
KNOCK-OUT

Stacked Variation

With slogan

QUi.

Simple Connectivity

6 mm

QUi.

4 mm
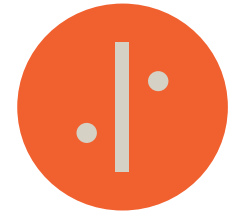
Simple Connectivity

Evolution of the Brand Mark

i.

1.

2.

3.

QUi.

Simple Connectivity

Identity

Who We Are at Our Core.

System of Values

What Principles Guide Us

Imagination and Creativity - vibrant energies that stimulate daily life and bring value in the possibility of individual expression.

Minimalism - impactfullness of modesty and holding power in essential things.

Adaptivity - delicacy in becoming part of an environment seamlessly, satisfying needs and bringing value by opening to new possibilities.

Synchrony - importance of empathizing on a deeper level, enhancement of tuning in intentions and time.

Connection and Collaboration - as the most fruitful directions of evolution. We also encourage Desktop walkthrough as a practice enhancing co-participation, transparency of decisions and mutual recognition.

Equality - for everyone to have accesibility to the same opportunities

Wisdom - environmental, moral and economical consideration of moving to another country for people who are not supported by a stable job.
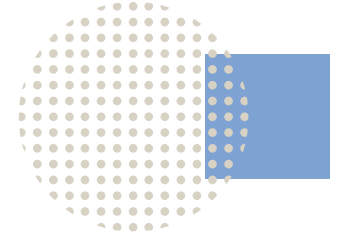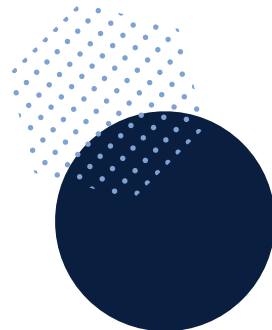
Personality

Our Character

Honest and Reliable - we want to instill in customers the confidence to trust us as an effective support for communication.

Authentic

Smart and Ergonomic - we want to support users' activities without having them perceive a distance with the tools we're providing or the people we're connecting them with. We want to make the complexity of technology more human.

Empathetic

Simple and Familiar - we want to recall toys and Montessori Tools, to present ourselves as wholesome and down-to-earth.

Intuitive

Positioning

Who We Are in Relation to Others.

Unique Selling Proposition (USP)

What Distinguishes Us

We want to implement remote interships with a solution that feels low tech, in harmony with human attitudes and primary practices.

Purpose

What's Our Intention

Supporting meaningful connections. Using technology to collaborate. Valuing time, experience, talent, and finding a way to implicate them for inner enrichment.

We feel responsible for a more purposeful future. We believe in the power of technology, that enables people from opposite sides of the world to connect - almost wiping out the distances.

But we also believe in human **integrity**, and we feel the urgency to make room for what matters, to nurture the links we really need, taking power away from what wastes time and does not give anything enriching in return. We believe this to be the measure of the value of our existence.

Mission

Why We Exist

We believe in the importance, within design processes, of practicing desktop walkthroughs, and in their power to externalize and visualize potential service scenarios. They are used to represent temporal and physical movements and interactions, in order to document processes and stakeholder journeys and reach shared understanding about criticality of elements.

Vision

Where We're Headed

We envision a future guided by the ethical choice of consciously selecting how we apply technology.

We encourage a system where interns from any living situation are supported by the possibility to collaborate from remote; where distance isn't a barrier, but an opportunity to broaden horizons.

Promise

What We Will do For Customers

We want to ensure that users always communicate consistently, **effortlessly** and **smoothly**, while remaining grounded. We promote connections among people, but also natural harmony between product and user.

> "Our product began to feel real when the branding and communications finally came together and were visualized."
>
> - (Annie) Yaan Wei
>   Industrial Design

image by Element5 Digital

Mood Board

How do we want our customers to perceive our brand and describe it to others?

We took a look at brands and practices we'd describe in the same terms to better represent the energy and intention that guides us.

practical habits as an intermediary to work on another dimension

simple product making life easier

use of simple blocks with the aim of studying dynamics and elaborating a plan
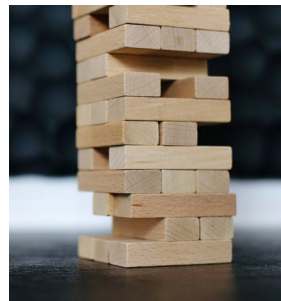
LUSH

proximity to the natural sphere, importance of the involvement of the senses

connectivity and instant communication on the same board

board with two players interacting

improving performance, encouraging innovation, supporting talent
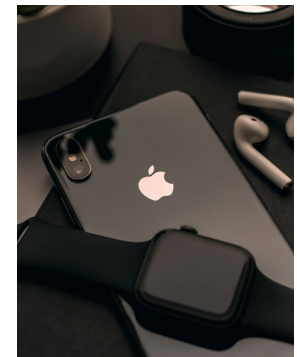
simple interface to comply with human gestures

taking care of one's needs

simple shapes used to represent something else

Brand Voice

How We Sound.

When Writing as Qui

How All Copy Should Come Across

The name itself, Qui, Italian for here, belongs to a playful dimension, in fact the product itself works with the assumption that people want to collaborate from a distance, and in opposition to this, suggests proximity and immediate communication.

We define the character of our communication as:

Polite, genuine, clear and essential.

Communication should reflect the aim of our system to be **respectful**, helping the user with what they're doing without being intrusive, and consequently it should always be:

Functional
Allowing an easy, enjoyable experience

Considerate
Writing should be audience-first

Straightforward
Simple and direct, transparent.
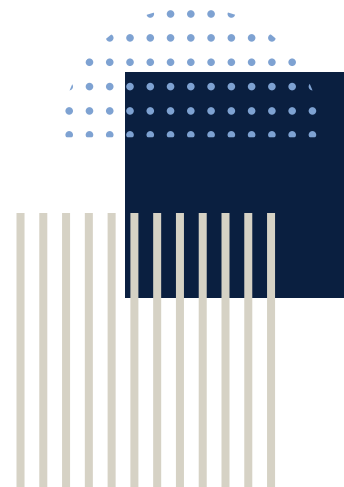
Brand Statement

The Brand's Values and General Direction

For hybrid design teams who need remote and in-presence unity to achieve fluid collaboration, Qui is the solution that enables distant Desktop Walkthrough sessions by providing them with an AR compatible toolset and connected platform which keeps people physically grounded while they work and feel in sync.

Polite

Genuine

Slogan

The Unifying Message of All Communications and Campaigns

Simple Connectivity

Tagline

The Unifying Message of All Pieces Within a Specific Campaign

May We Sync

Clear

Governing Brand Identity (GBI)

How we see ourselves with distinction from competitors

Applying Montessori Learning to the Metaverse

Essential

Art Direction

Who We Are on the Outside.

Color Palette

The following palette has been designed for use in all communications.

The primary palette consists of three colours: Orange, Navy, and Warm Gray. They should all be used in the same proportion.

Warm gray can be used with a 50% opacity for bigger text in the background.

The secondary palette also includes Light Blue and White.

Light Blue should be used only sparingly, as an accent.

Standard pages with text should have a white background, but it can assume other colours for graphic purposes.

ORANGE

NAVY

WARM GRAY

PANTONE 1655C
CMYK 0 | 77 | 90 | 0
RGB 231 | 89 | 54
HEX #ea5625

PANTONE 282 C
CMYK 100 | 88 | 44 | 50
RGB 4 | 30 | 66
HEX #041e42
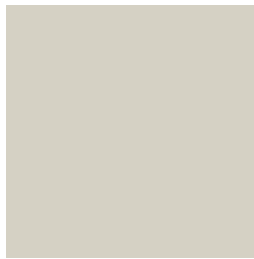
PANTONE 12-0404
CMYK 16 | 13 | 21 | 0
RGB 218 | 216 | 203
HEX #ded9cd

LIGHT BLUE
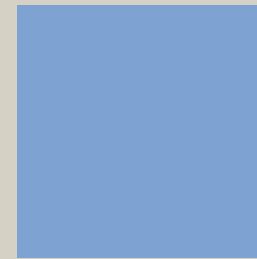
WHITE

PANTONE 2121C
CMYK 50 | 28 | 1 | 0
RGB 140 | 169 | 215
HEX #8ca9d7
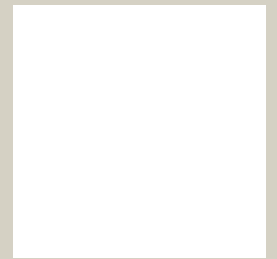
PANTONE 000 C
CMYK 0 | 0 | 0 | 0
RGB 255 | 255 | 255
HEX #ffffff
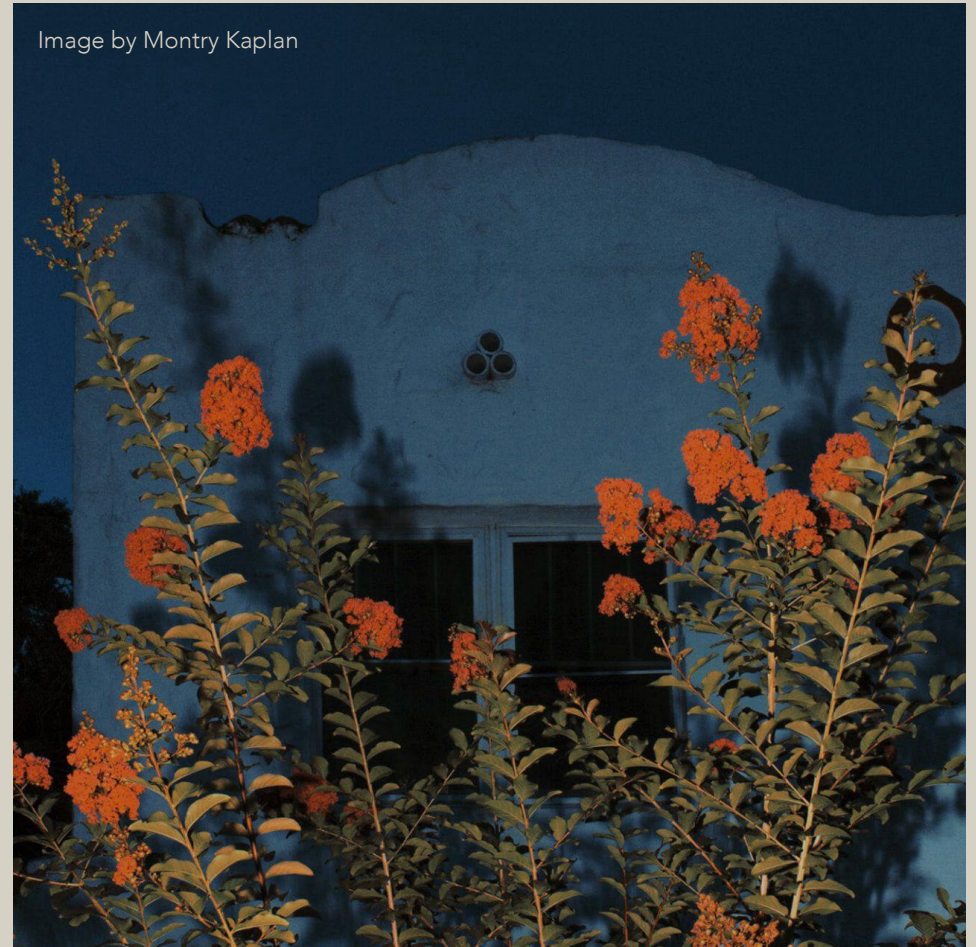
Patterns

To be Used for Graphic Flare
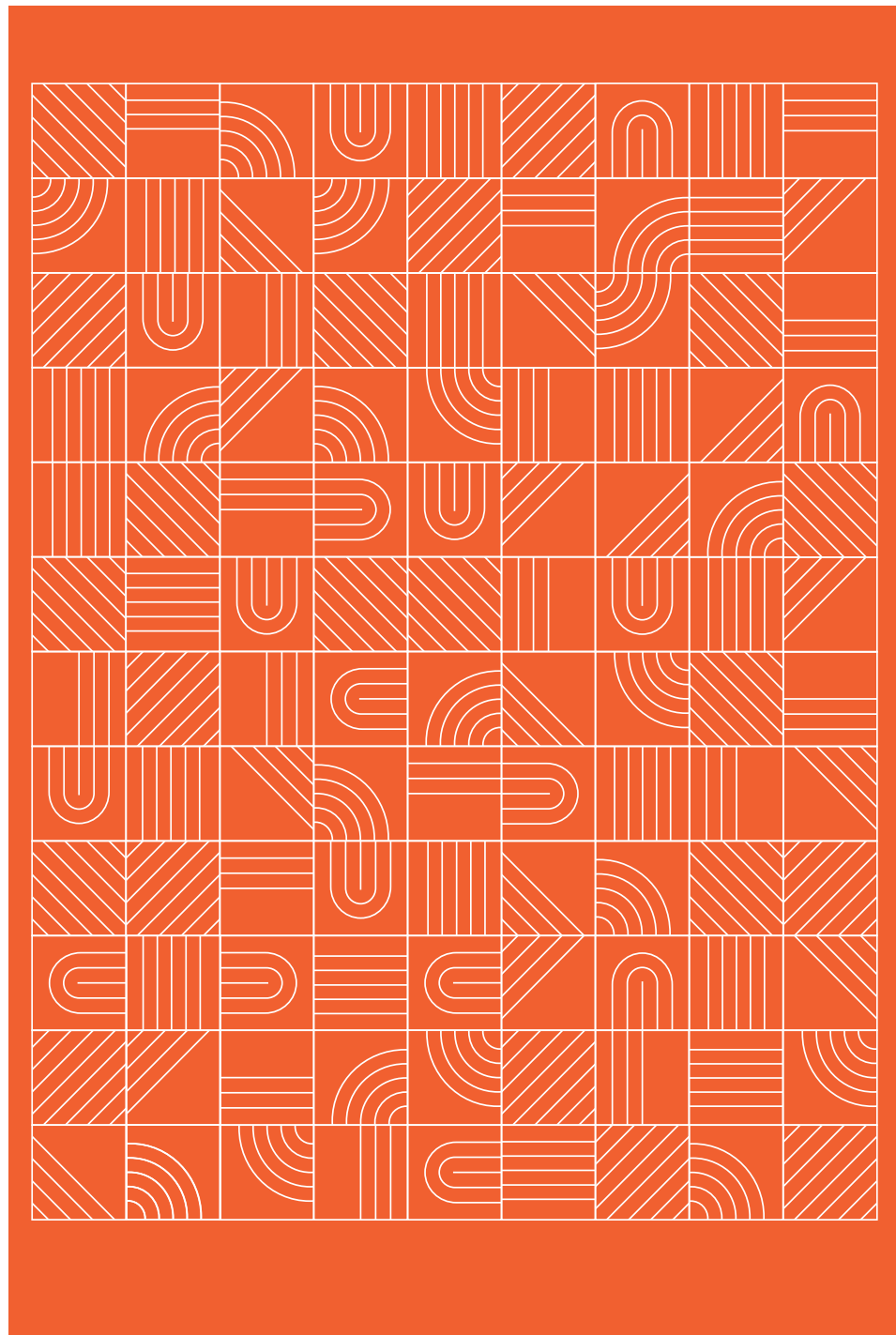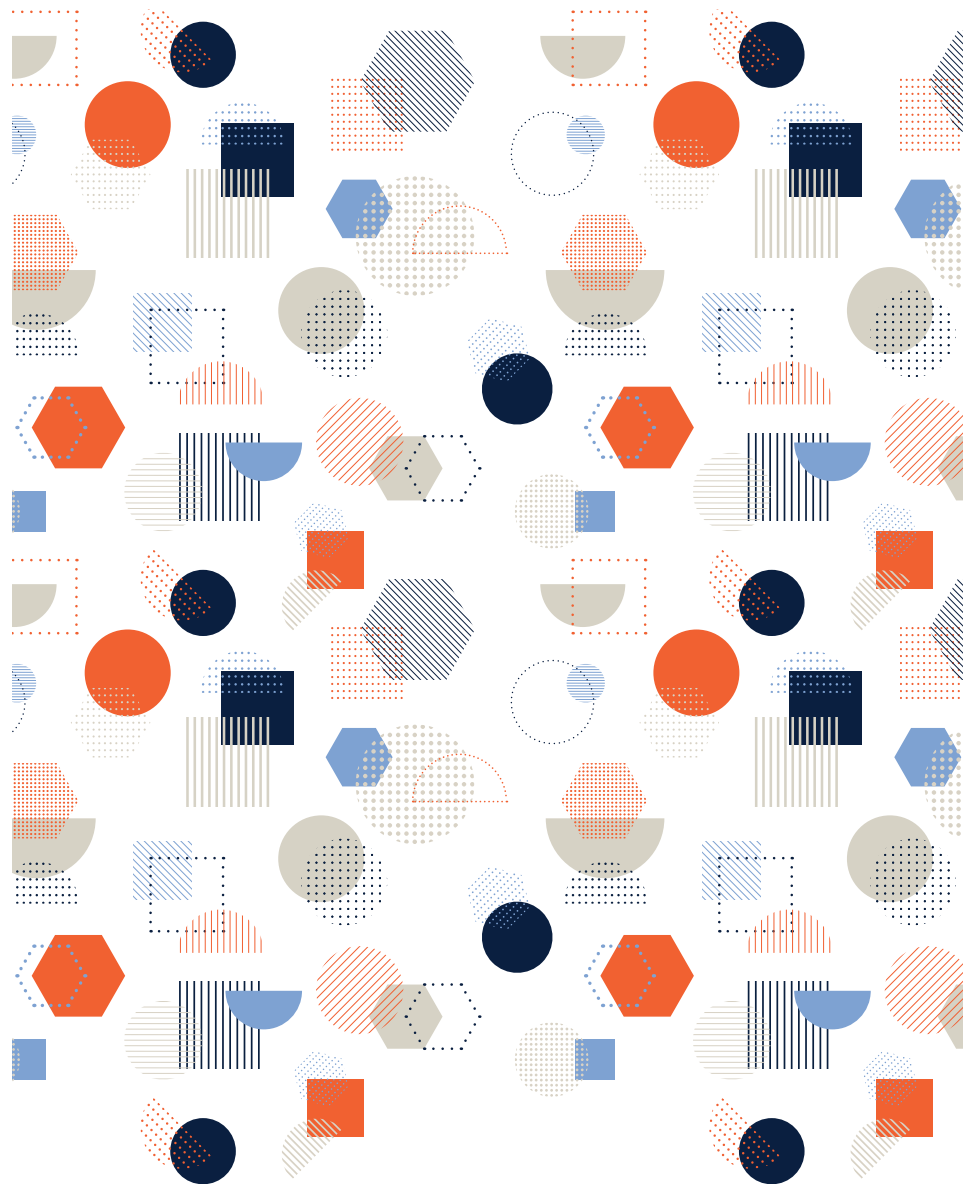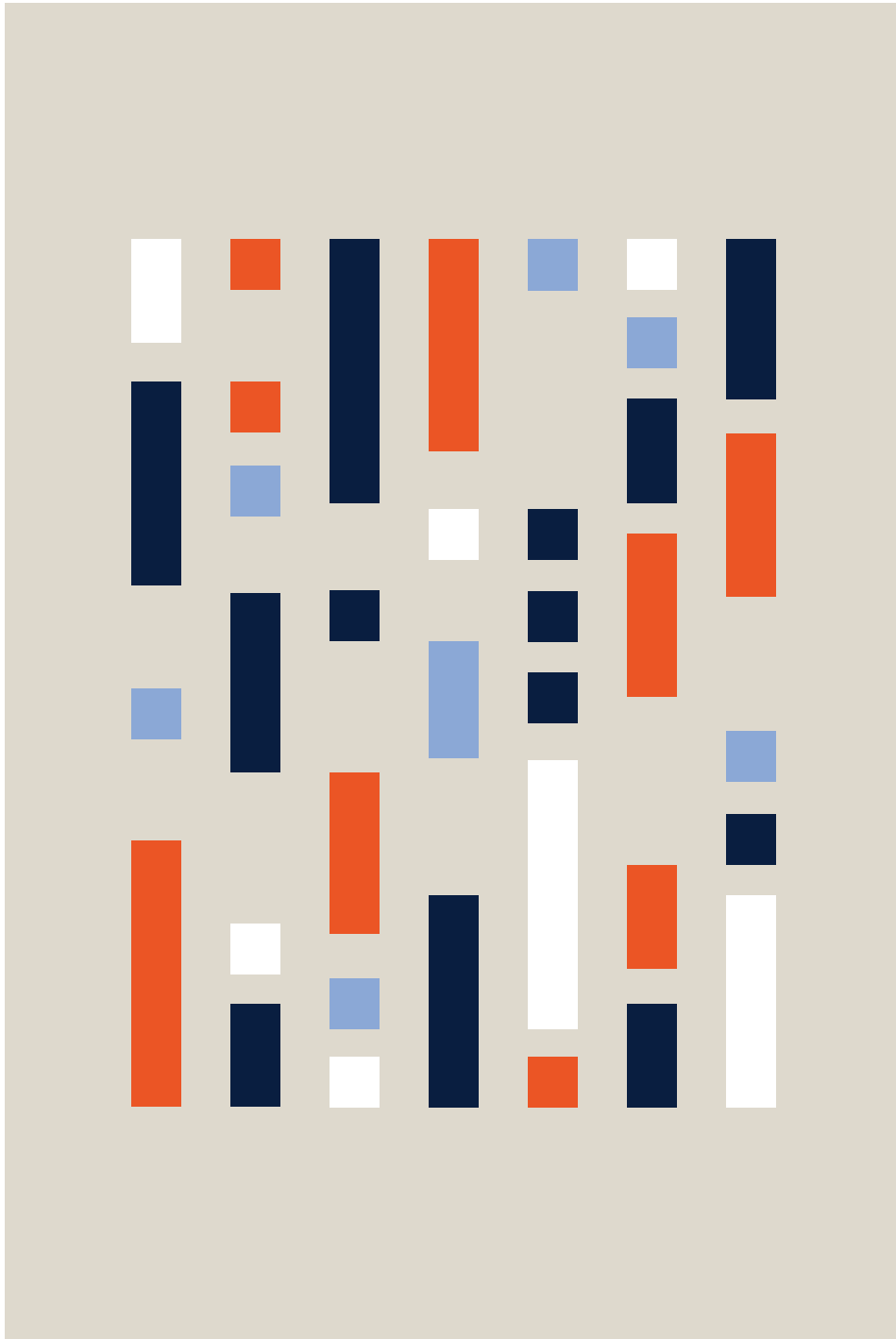
Photography

Calm and Clear

Our photography style is light, airy and natural; nevertheless, light should never exceed and end up in overexposure. We use both natural and artificial light.

Composition can be both symmetric and asymmetric, and the observation of the rule of third is also welcomed.

We strive for well-composed photos reflecting cleanliness, objectivity and softness. They shouldn't result chaotic nor intricate, but still convey warmness. For this reason, photography should sometimes include people to convey the human presence, without showing the full face or characterizing the character.

Photos should emphasize materials and their tactile quality.

Photography Mood Board

Images by CottonBro Studio
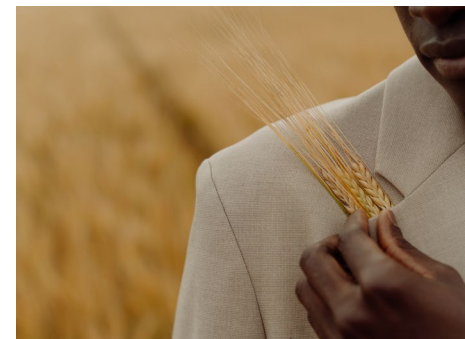
Original image by Daria Shevtsova

Original image by Polina Zimmerman
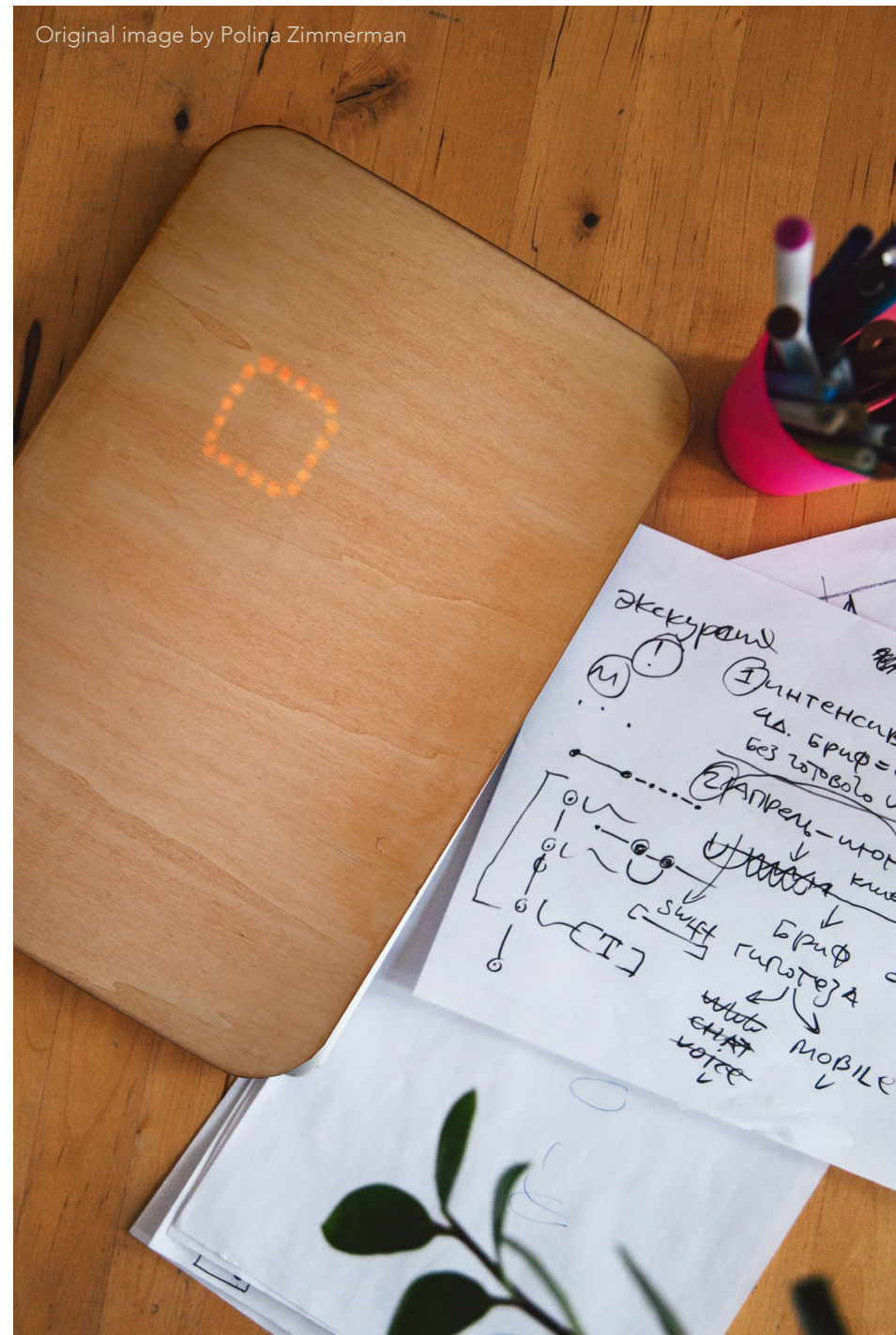
Original image by Mikhail Nilov

Original image by Lina Kivaka

Type Treatment
Our Voice, Personified

Name **Avenir**
Category **Sans-serif**
Classification **Geometric**
Designer **Adrian Frutiger**
Foundry **Linotype GmbH**
Release date **1988**
Weights **6**
Styles **12**

Aa Bb Cc Dd Ee Ff Gg Hh Ii
Jj Kk Ll Mm Nn Oo Pp Qq
Rr Ss Tt Uu Vv Ww Xx Yy Zz
0 1 2 3 4 5 6 7 8 9

Light

Light Oblique

Book

Book Oblique

Roman

Oblique

Medium

Medium Oblique

Heavy

Heavy Oblique

Black

Black Oblique

Typeface Selection
Why Avenir

The typeface Avenir draws inspiration from Futura. Futura is the latin word for **future**, Avenir has the same meaning in french. Adrian Frutiger wanted to improve on the Futura font and add a more human feel to it.

We also aim at an improved future with a strong human feel, and we want to reflect that with the typography we use for QUi.

Image from FontShop

"A time for fonts with a human touch"

About Avenir

Avenir is a geometric sans-serif typeface designed by Adrian Frutiger in 1987 and released in 1988 by Linotype GmbH. The family takes inspiration from the geometric style of sans-serif typefaces developed in the 1920s that took the circle as a basis, such as Erbar and Futura. When creating Avenir, Frutiger intended it to be a more organic interpretation of the geometric style. He shortened the ascenders, made the horizontal strokers thinner than the verticals, and made round shapes more oval. These refinements increase the legibility of Avenir, especially when used in long texts.

Frutiger described Avenir as his finest work: "The quality of the draftsmanship – rather than the intellectual idea behind it – is my masterpiece. (...) It was the hardest typeface I have worked on in my life. Working on it, I always had human nature in mind. And what's crucial is that I developed the typeface alone, in peace and quiet – no drafting assistants, no-one was there. My personality is stamped upon it. I'm proud that I was able to create Avenir."

Page Headers:
Avenir Black | Orange
20 pt (21 pt leading)

Page Subheaders:
Avenir Black | Navy
14 pt (16 pt leading)

In-Text Header:
Avenir Black | sOrange
14 pt (16 pt leading)

In-Text Subheaders
Avenir Black | Navy
12 pt (14 pt leading)

Main Body Texts:
Avenir Roman | Navy
9 pt (11 pt leading)

Notations:
Avenir Light | Navy
9 pt (9 pt leading)

LABELS
AVENIR BOOK | NAVY
9PT (10PT. LEADING)
200 TRACKING

Main Body Texts:
Avenir Roman | Warm Gray
9 pt (11 pt leading)

Notations:
Avenir Light | Warm Gray
9 pt (9 pt leading)

LABELS
AVENIR BOOK | WARM GRAY
9PT (10PT. LEADING)
200 TRACKING

AaBbCcDdEdFfGgHhIiJjKkLlMm
NnOoPpQqRrSsTtUuVvWwXxYyZz

Aa Bb Cc Dd Ed Ff Gg Hh Ii Jj Kk Ll Mm
Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz

Aa Bb Cc Dd Ed Ff Gg Hh Ii Jj Kk Ll Mm
Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz

Aa Bb Cc Dd Ed Ff Gg Hh Ii Jj Kk Ll Mm
Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz

Aa Bb Cc Dd Ed Ff Gg Hh Ii Jj Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz

Aa Bb Cc Dd Ed Ff Gg Hh Ii Jj Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz

The acceptable weights are

Avenir Black
Avenir Black Oblique

Avenir Book
Avenir Book Oblique

Avenir Roman
Avenir Oblique

Avenir Light
Avenir Light Oblique

Further design changes in the font are not accepted, excluding spacing with value 200 for words used for labeling purposes.

All phrases should start with capital letter, and be concluded by a full stop. Titles don't need full stops, unless they end with the Logotype, that should always include a dot.

It shouldn't use exclamation marks, abbreviations or slang. Text hyphenation should be avoided.

Type Application

Correct use

Warm Gray text on Navy background is always accepted.

Wrong use

Orange text on Navy background is accepted only in Black styles.

Correct use

Correct use

Correct use
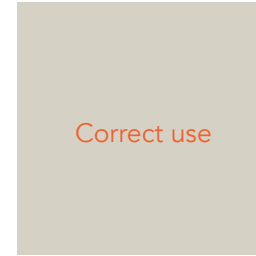
Orange and Navy are the only text colours accepted on Warm Gray and White backgrounds.

Wrong use
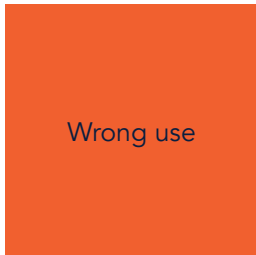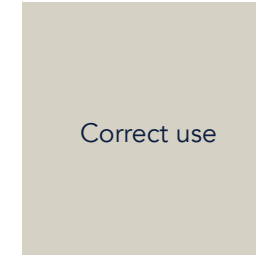
Navy text on Orange background is never accepted.

Correct use
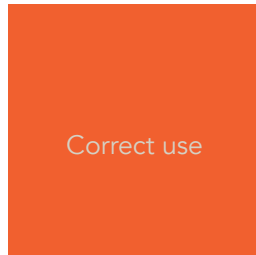
Warm Gray text is the only one accepted on Orange background.

Correct use

Correct use

Wrong use
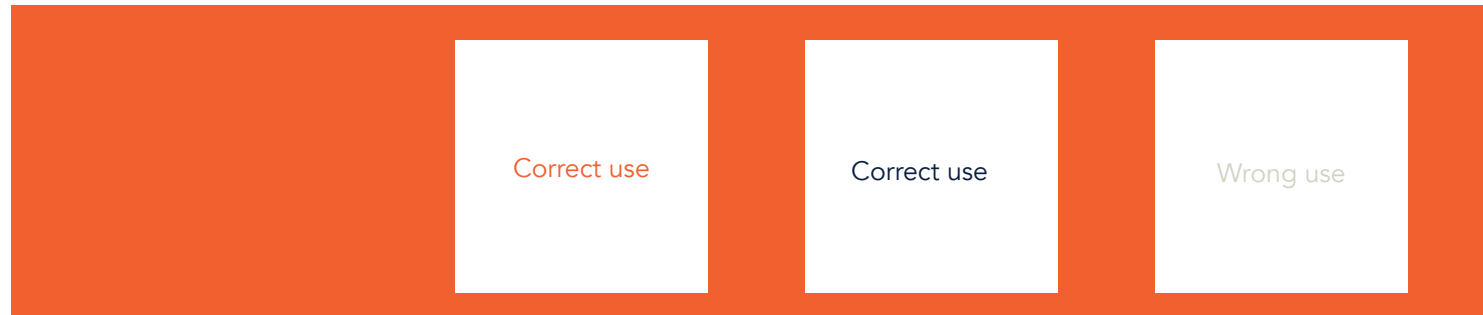
Visual identity should always reflect a clean, essential and geometric style.

Gradients are not intended to be used.

Texts on backgrounds of the same colour cannot be used.

Colours can be used with regulation in Opacity, in which situation both Navy and Orange are allowed, if visibile, on any background colour of the colour palette.

"Home Page"

Find Qui in the Metaverse

We are designing for a 2037 scenario that envisions having the metaverse as the main means and place of communication dedicated to sociality, education, work, entertainment and other activities that include interaction beyond a physical space.

We had to rethink the way touchpoints for customers could be conceived, without having a clear and defined idea of what this could translate into. Since **we assume that websites, applications, and perhaps even computers and telephones, will not exist**, we picture that people could get in touch with companies like ours by connect to the metaverse, and accessing a place that physically translates Qui and its identity, and could function like a website proving information about the offering, that visitors could find out by moving within the space.

If it was a place, Qui would be simple and stylized, it would convey practicality, warmness and a sense of serenity. We kept it essential by using merely our brand colours, in different opacities. We chose to make it funcional by having **six focal points**, associated to the main groups of information that interest customers when they want to know a brand.

A **lounge** seating point invites the visitor to discover the brand, its identity and values. You can learn about Qui's positioning by getting close to the **window**, that offers a view on horizons. On a **table** there's our main product, which introduces our method and instructions for use. On its **left**, you can browse different sets, and **above** the solution you can find the services connected to them. Finally, on the right, a **front desk** introduces the possibility to contact the staff of Qui.

SERVICES
What we offer - TimeHop and ToolRent

CONTACT US
Talk with someone from Qui that can assist you

SOLUTIONS
Discover the set of tools that fits your company the best

SERVICES

HOW TO
What are Desktop Walkthroughs, how and why to conduct one

HORIZONS
Our Purpose, Promise, USP, Mission and Vision

TAKE A SEAT
Qui, Identity and Values, what we promote
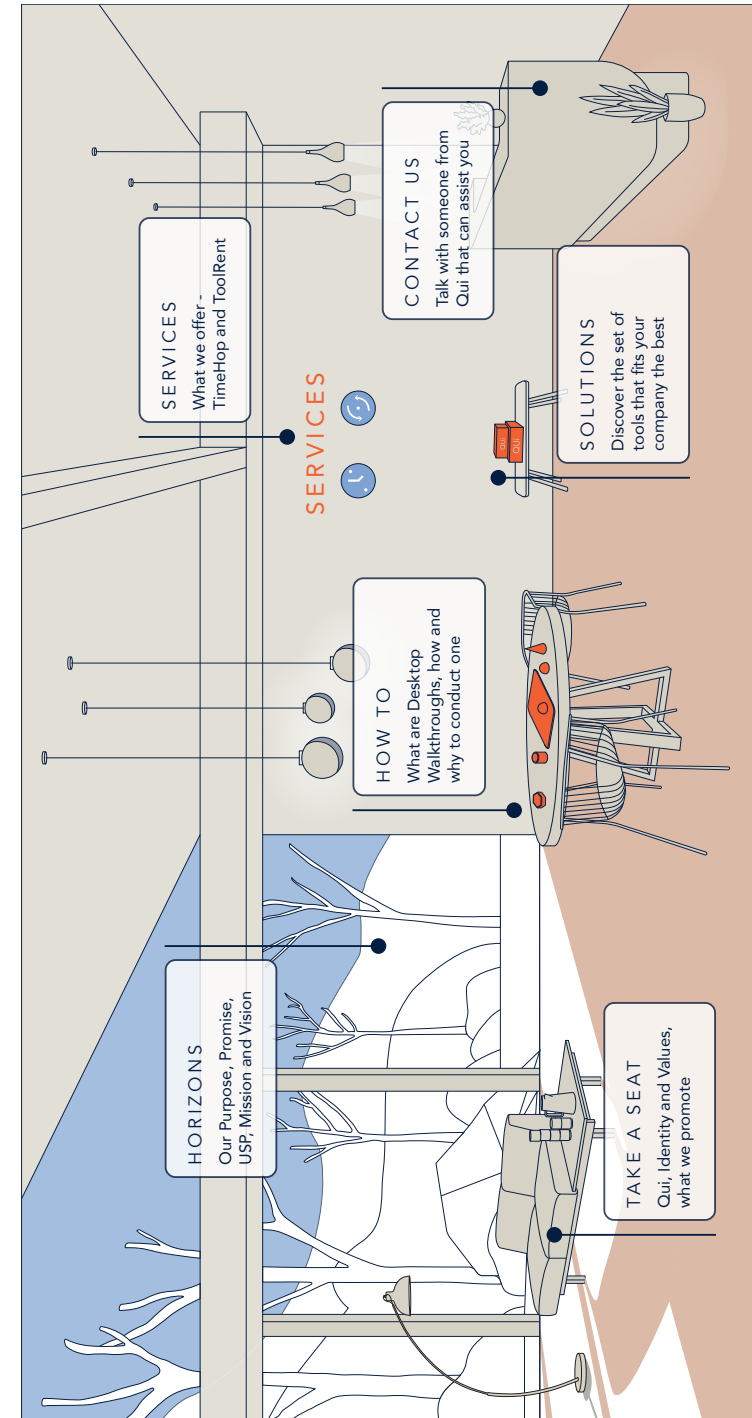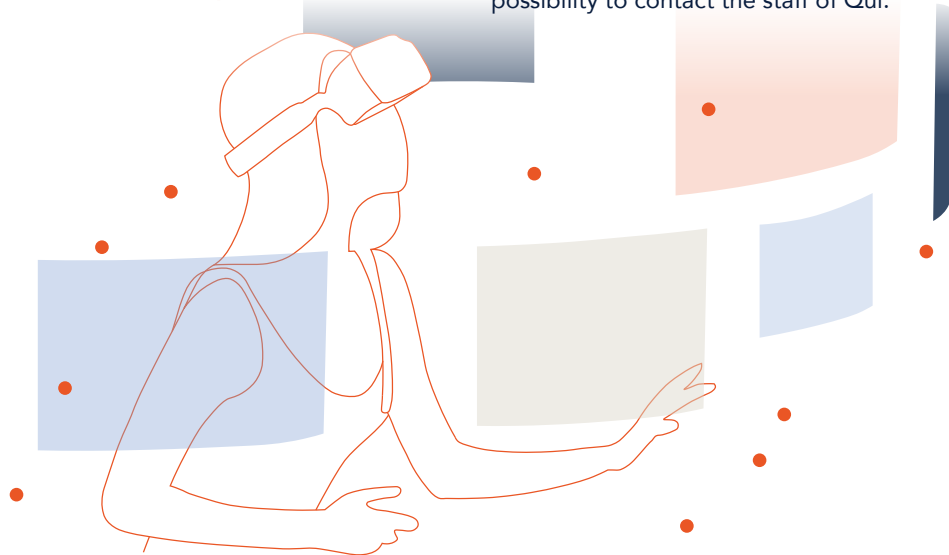
Packaging

How We Send Our Tools Into the World.

QUi.
Simple Connectivity

QUi.
Simple Connectivity

Hello.
Welcome to the Qui collective.

Qui was born because we believe in the importance of Desktop Walkthroughs for the ability to capture intangible, temporal, and dynamic aspects of service. Conceived in Italy, our name "qui," in Italian, means "here." We are so glad you've chosen to be "here" with us. Inside this box you will find tools to support **meaningful connections**, technology to **enable collaboration**, and the return of **tactile stimulation** to a touchless metaverse. Items include one board and twenty-seven blocks, all compatible with your preferred AR devices.

We want to ensure that users always communicate consistently, effortlessly and smoothly, while remaining grounded. Through all of this, we promote connections among people, but also natural harmony between product and user.

Thank you for coming on this journey with us.

6 service

"I loved researching emerging tech and learning behaviors, and when we would all get together to share the new things we'd discovered that week. We could always get excited about our teammate's new ideas."

- Morgan Ricard
  Graphic Design & Advertising

Services

Qui and TimeHop.

Overview

TimeHop

Our tool set is the main touchpoint of a service we call TimeHop, which **enables employees and interns to access a library of historical records of past desktop walkthroughs they've been part of.** Users can access files which are shared amongst their team, or they can **revise and save a copy** of their own to propose alternatives to their collaborators. It also introduces for the design team the possibility to **pause and resume** the process in case of interruption, or simply get back to working on them at a later time.

TimeHop includes an **open-source public platform** feature, with user-created desktop walkthrough content which can be stored or **shared with others within our network** in order to spread this kind of knowledge about design processes with the industry and junior professionals. Shared desktop walkthroughs can be watched in real time by viewers or paused at key moments, they can be commented upon, and re-shared across the network in accordance with the original post owner's privacy settings. **This innovation would foster a fair distribution of social, economic and environmental resources**, as well as **increasing the variety of spaces, goods and services available** for fulfilling the diversity of everyday lives.

Benefits for Users

For End Users

- Making internships accessible to more people, regardless of economic status or physical abilities
- Improving flexibility of places, liveability, collaborative ownership.
- Increased involvement of disadvantaged youth
- Promoting meaningfulness of experiences: using technology to connect in a healthy and constructive way.

For Companies

- Improving effectiveness of desktop walkthroughs, and therefore of design processes altogether.
- Reinforcing the sense of social and cultural identity: employees and interns feel part of the company team while being immersed in their context
- Fostering cultural diversity of the people involved.
- Enhancing collaborative processes.
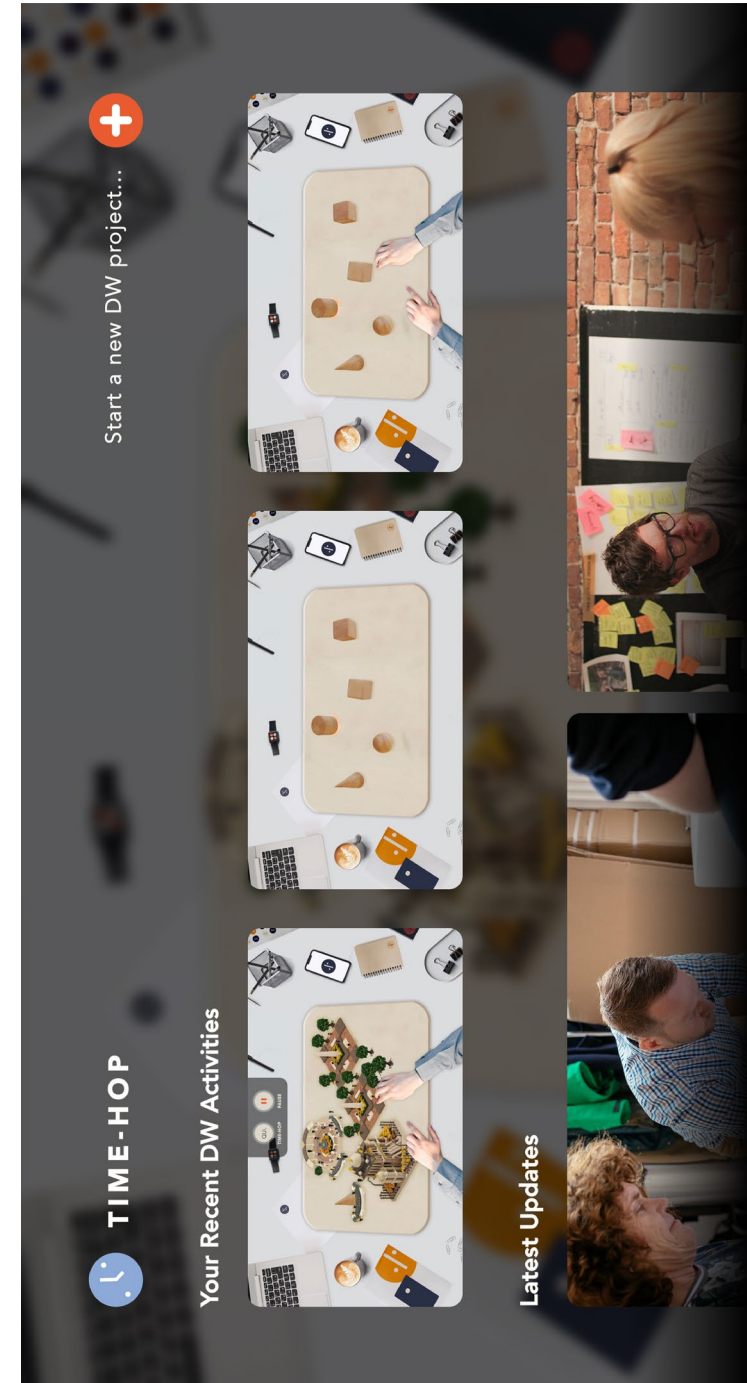
Start a new DW project...

TIME-HOP

Your Recent DW Activities

Latest Updates
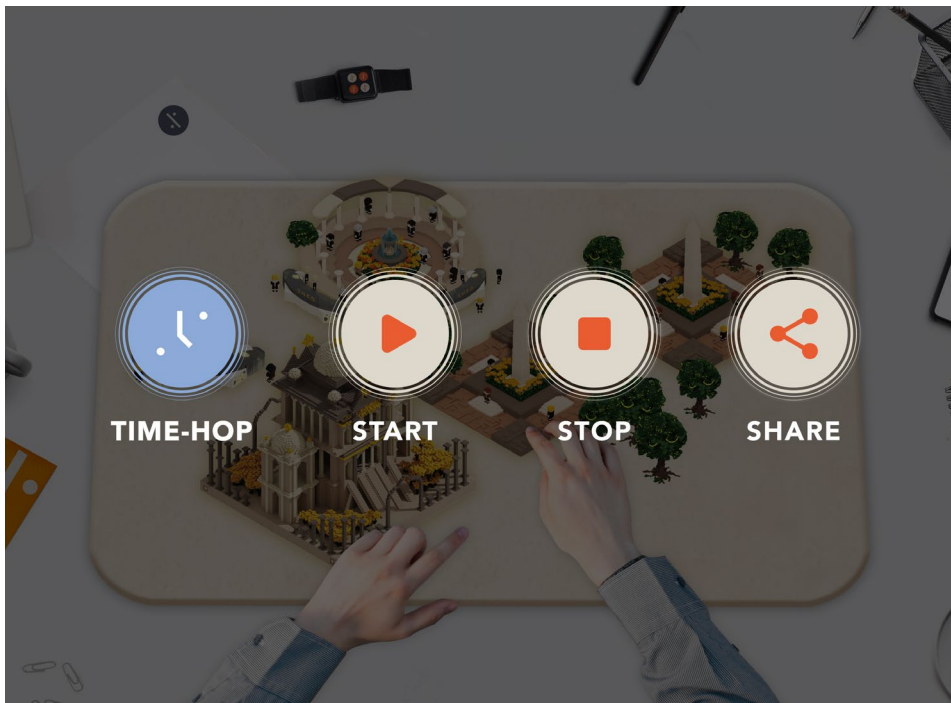
MODIFIED QUI LOGO

Offering Map

Elements Offered to Users

An offering map is a graphical representation of the services that the solution offers to its users. On one side, Tool Set and ToolRent system for product usage, and on the other, TimeHop as community service (Internal and External).

Key

● **Main Offering**

identifies the services and products that give identity to the idea and are necessary for its functioning.

● **Secondary Offering**

identifies the services and products that support the main offering, enrich it and are functional to the main activities.

QUi.

TIMEHOP (service)

Private access to historical records of past desktop walkthroughs a user has been part of.

TOOL SET (product)

A tool set and board designed to conduct Desktop Walkthroughs. The tool set supports hybrid Desktop Walkthrough sessions by connecting to the Metaverse, as it is compatible with AR/VR Headsets.

TOOLRENT (service)

Products are delivered and then returned when the period intended for their usage comes to an end.

Share Platform

Possibility to share finalised Desktop Walkthroughs and store them in a public library accessible to all Qui users.

Sharing Final DWs

Accessing a library of public DWs

Review finished DWs

Pause for interruption

Revise processes

Access for new team members / clients

Stakeholder Map
With and For Whom?

A stakeholder map is a visual layout of all actors involved in a service, used to represent how they interact and are connected to one another.

Stakeholders

Qui Our product and brand

Users (Remote/Presence Workers) co-manage the system with Qui since the service it provides is an open-source platform with user-created content.

Customers (Companies) collaborate with Qui choosing it to support their activities.

Company Owners/Leaders are responsible for this choice.

Company Managers decide what tools will be needed.

Company HR communicate with everyone.

Headset Companies are involved in the design of Qui's offer, so that it is compatible with their products.

Advertising and Media help with the communication of the service.

Freelance Designers are involved in the design of products and services.

Logistics Partner is essential to bring Qui to users, supporting the ToolRent service.

Tech Support assist Qui members when technical problems occur.

Manifacturing Partners provide finished products that will be the primary offer.

Universities are also be impacted, in relation to a potential relation with the use of Qui by students.

Competitors perceive the activity of Qui and operate aware of it.

Degree of involvement of the actors

Inform

Consult

Co-design

Manufacturing Partners

Company Owners/ Leaders

Headset Companies

Customers (Companies)

Co-produce

Company Managers

Users (Remote/ Presence Workers)

Advertising and Media

Co-manage

Company HR

Qui

Main provider

Logistics Partner

Freelance Designers

Strategic partners

Actors involved

Tech Support

Providers for goods and services

Actors impacted

Universities

Competitors

Systems Map

Linking Actors

A systems map is a single image representing the links between actors involved and the flow of resources (information, money, and materials) in a service

Our proposal offers innovation not only at a product level, but as well as in new forms of interaction/partnership between different stakeholders.

Flow of Money
(Payment for product and service)

Customer Company's HR

Flow of Information
(What's needed for work task)

Flow of Information
(Delivery address)

Flow of Materials
(Manufactured Product)

Flow of Data
(VirTual Time Hop Services)

USERS
(remote and presence workers)

Flow of Information
(What is needed for manufacturing)

Manufacturing Partner

Flow of Information
(Timehop Usage)

Flow of Money
(Payment for product)

QUi.

Flow of Materials
(Toolsets)

Flow of Materials
(Toolsets from temporary remote workers)

Flow of Materials
(Toolsets from temporary remote workers)

Flow of Materials (Toolsets)

Logistics Partner

Flow of Money

Flow of Information
(Delivery Needs)

Personas

The Remote Intern, and the In-Presence Boss.

Using personas creates empathy for users and assists in understanding nuanced emotions or perspectives.

Alessandra Intern

Basic quantatative data

Age | 21
Occupation | User Experience University Student, Summer Intern

Remote Worker

Physical Location | Verona, Italy

Description

Alessandra is a persevering university student working on her bachelor's in User Experience Design. She landed a summer internship which she's very excited to be attending remotely from her parent's home to save money. She will return to studies after completion.

Goals

To learn as much as possible in an authentic way during her temporary student internship.

To complete the internship, meet graduation requirements, and have a strong resume.

To be able to perform at a similaer pace and skill to entry-level employees at the company.

To prove themselves as hireable to upper management.

"I want to be as involved as possible in operations at my host company."

student intern

Frustrations

While working in the metaverse, sometimes there are struggles to all be working simultaneously in a hybrid remote/in-presence AR office.

While the metaverse creates endless opportunities, it can be disorienting to only exist virtually for hours of the day.

When a project suddenly becomes more physical, in-presence colleagues can forget about those only there virtually in their excitement to keep the work moving forward.

When speaking of past walkthroughs, it would be so much easier to show instead of tell. She wishes she could rewind the clock and play it all back.

Needs from Office Experience

Radar chart with axes: Collaboration, Independent Work, Supporting Tools, Industry Exposure, Supervision, Easy Communication, Transparancy among Teammates (remote/in-presence), Workplace Mobility
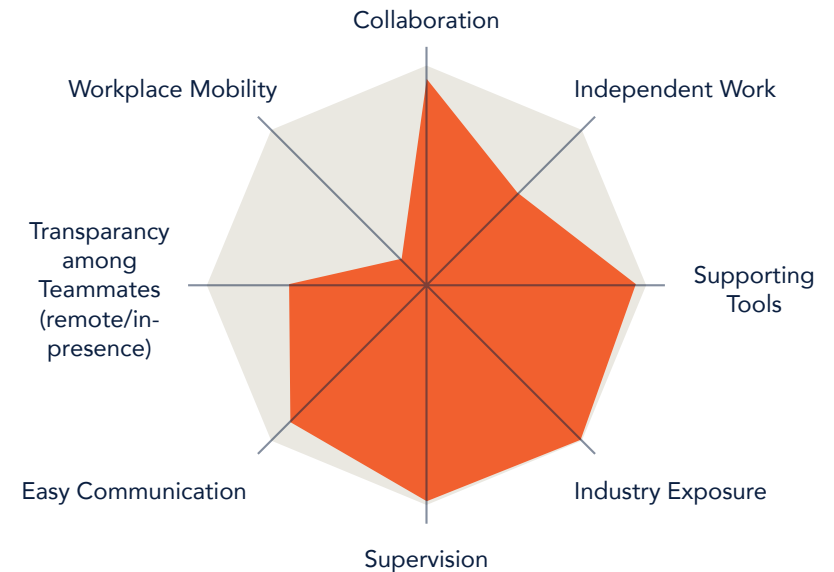
Peter InPresence

Basic quantatative data

Age | 37
Occupation | User Experience Professional, Creative Boss

In-Presence Worker

Physical Location | Manhattan, NY (USA)

Goals

To unify his team.

To create strong work, which adds value to clients.

To position himself for promotion.

To assess if interns would be suitable for full-time hire in the future.

Description

Peter has been working in various design fields since he graduated almost 15 years ago. He is now a creative director and boss of a team of designers, which is a role he worked hard for and enjoys. Keeping communicaion between in-presence and remote workers is the biggest challenge of his modern role, which he hadn't anticipated before the Metaverse.
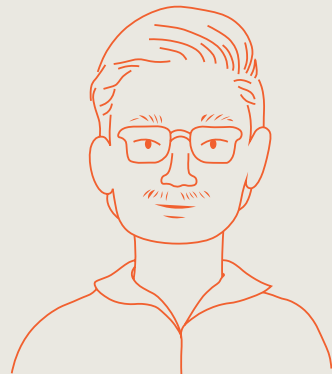
"I want to be able to lead my hybrid team effectively, and enjoyably."

Frustrations

When the in-presence and remote workers feel disconnected, and it's hard to keep the team together.

While the metaverse creates endless opportunities, it can be disorienting to only exist virtually for hours of the day.

When remote workers don't feel able to contribute, and not knowing how to get the best work from them.

Working quickly and efficiently with the tools available.

creative boss

Needs from Office Experience

Collaboration
Workplace Mobility
Independent Work
Transparancy among Teammates (remote/in-presence)
Supporting Tools
Easy Communication
Industry Exposure
Supervision
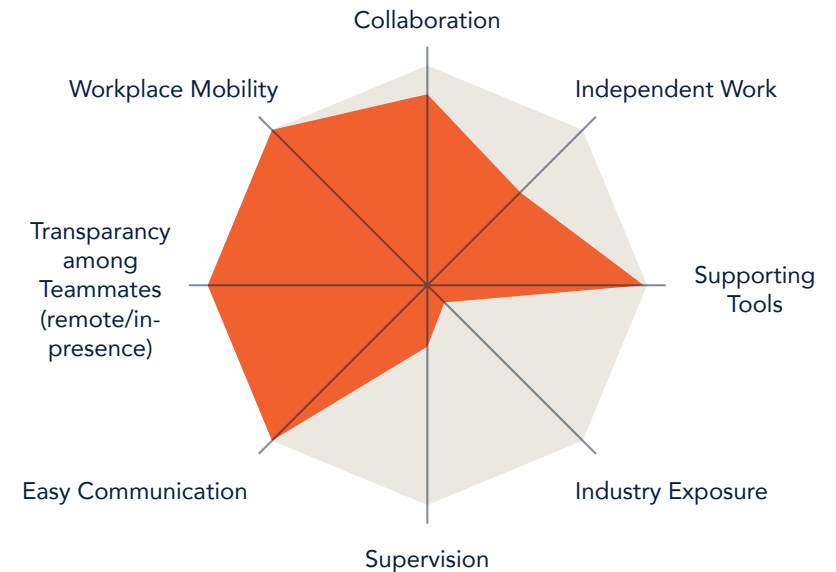
Journey Maps

Step-By-Step User Interactions.

Journey maps visualize the process a user must go through when participating in our service, including their actions and emotional experiences.

Alessandra Intern's Journey Map

"I want to be as involved as possible in operations at my host company."

PRE - SERVICE

PHASES

Action Notification

Being informed about obtaining the internship at the company. Introduction to Qui, that will provide the support for the remote internship.

Delivery Information

Being contacted by Qui that communicates the delivery information

ACTIONS

The company informs selected future interns about their admission and the modalities that the internship will adopt, and asks interns to provide the address they want support tools to be delivered to.

Qui, a collaborator of the hosting company, informs interns about the expected date of delivery of their product.

TOUCH POINTS

(2037) digital mail exchange

ACTORS

Host Company, Qui

Qui

EMOTIONS

PROUD

REASSURED

"I can't believe I got the internship I was hoping for!"

Alessandra feels assisted by Qui and satisfied with the efficiency of its organization

PAIN POINTS

The support from the company is very limited, the interns doesn't feel in direct contact with it. Alessandra applied for this internship aware and relieved she could attend from remote, but know she wonders whether it's going to work.

INGIHTS/ OPPORTUNITIES

After communicating the ammission to interns, companies could have meeting for interns to get to know them and to introduce them to eachother, to give general information and to answer eventual doubts.

SERVICE

PHASES

Receiving the Product
Some days before the internships starts, the Qui product is delivered to the provided address.

Internship Status
General direction of work for the internship

ACTIONS

Alessandra opens the package from Qui and finds the product, along with a return lable (that she'll have to keep until the internship's over to send the tool set back). She follows the instructions, setting up the board and tools and connecting them to her headset.

Qui, a collaborator of the hosting company, informs interns about the expected date of delivery of their product.

TOUCH POINTS

Package	AR/VR Device, Qui Toolset

ACTORS

-	Creative Boss, Company Employees, Interns

EMOTIONS

CURIOUS

EXCITED

"I can't wait to discover how to use this new tool"

Alessandra is finally starting to align with the company values and goals

PAIN POINTS

The tool set came just a few days before the start of the internship, because there was a delay in the delivery system. It's important to consider people that live in more remote places and could have difficulties to get their tool in time for the start of the internship.

INGIHTS/ OPPORTUNITIES

It would be useful to have preliminary meetings for the intern, and in general getting contacted from the company well in advance, so that the intern can arrange themselves and the company can schedule the delivery taking into consideration eventual delays.

SERVICE

Conducting Walkthroughs
Using the Qui toolset and platform for projects with other employees

Final Phase
The intern's job is almost over, the projects are completed

Alessandra conducts her internship at the company working primarily on User Experience Design. She makes extensive use of the Qui toolset. She also finds the Share platform connected to it very useful: she's able to access a public library of DWs shared by other people, that show her different points of view and new ideas to implement her work.

As the assignments involving Alessandra one by one are finalized, she decides to share on Qui's Public Library her digital notes and the contribution she was responsible for during her internship.

Qui Toolset, AR/VR Device, TimeHop	AR/VR Device, TimeHop

Project Design Team	TimeHop Community

STIMULATED

SATISFIED

"I really feel part of a big, creative community. This interaction stimulates both personal interests and working methods"

"I'm happy to share my work with other people. I learned a lot and it's interesting to share ideas and connect with other people's minds"

The remote intern could feel more included and active if other learning moments had hyrbid-minded tech. Arrange meetings around remote workers can be difficult, they usually depend on the timezone of the actual office.

The intern would still like to have access to this library even when the internship's over. She felt part of the platform and would like to keep interacting on the platform.

Qui tool set and platform could be the starting point for a multi-device service supporting different kinds of activities.

The service could be made accessible also outside of the context of internships, so that people can have their physical processes saved to be revisited and can keep a constant exchange with the Share platform.

POST - SERVICE

PHASES

Internship Ends
The period of activity planned for the internship is concluded

ACTIONS

Alessandra logs out of Qui's platform, disconnects the Qui board and toolset from her headset and puts them back in their package, where she left the return lable she now can use to send the package back.

TOUCH POINTS

Return Package

ACTORS

-

EMOTIONS

IMPRESSED

"This system really made me feel part of the company. I'm sad I have to give the tool back, but the shipping should be easy"

PAIN POINTS

The intern would still like to have access to this library even when the internship's over. She felt part of the platform and would like to keep interacting on the platform.

INGIHTS/ OPPORTUNITIES

The service could be made accessible also outside of the context of internships, so that people can have their physical processes saved to be revisited and can keep a constant exchange with the Share platform.
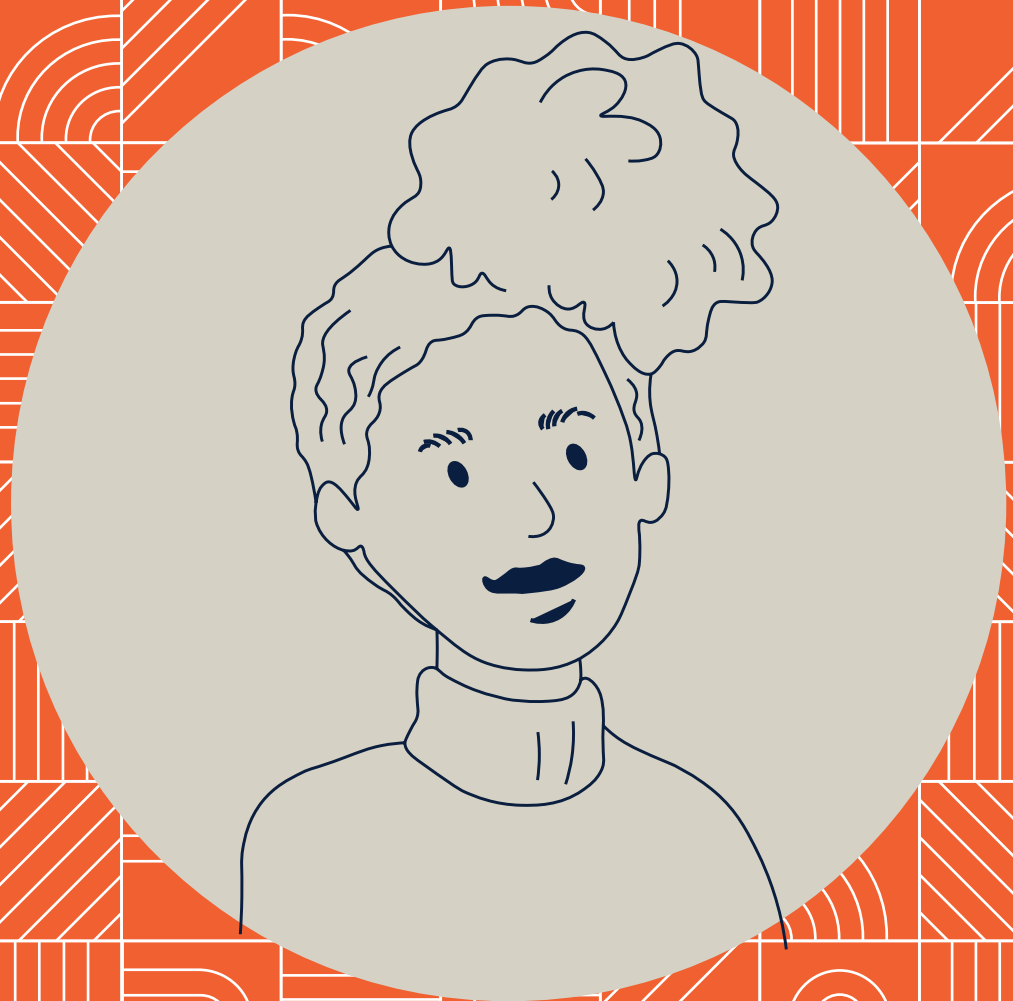
Peter In-Presence's Journey Map

""I want to be able to lead my hybrid team effectively, and enjoyably.""

	Awareness	Search the Metaverse
PHASES	Realizing the loss of value coming from the lack of contact with colleagues while working virtually.	Deciding to resort to a service that can help with conducting internships.
ACTIONS	Peter recognises that, since the Metaverse has become the main workspace, he has had a hard time collaborating and communicating with the teams he's been directing.	Peter looks on the Metaverse for a solution to the problems he has encountered while directing remote teams in the Metaverse. He compares and evaluates alternatives.
TOUCH POINTS	AR/VR Device, Metaverse	
ACTORS	Project Design Team	-
EMOTIONS	FRUSTRATED	DISAPPOINTED
	"This modality of work and interaction has me feeling detached and hindered by distance"	Peter feels like the effectiveness and personal enrichment deriving from his work isn't equal to the efforts he puts into it.
PAIN POINTS	To find a solution to the problem caused by extreme levels of digitalizations, Peters has to look on the platform that is the source of the problem itself. He is "immersed" in a digital space but feels distant from everything.	
INSIGHTS/ OPPORTUNITIES	There should be a more direct, physical and interactive way of exploring different options. Going back to work practices fully and compulsorily in presence could cause problems to some people and exclude others.	

SERVICE

<table>
<tr><td>**PHASES**</td><td colspan="2"></td></tr>
</table>

PHASES

Adoption of Support Tool

Selecting a solution that matches needs and values

Reorganization of Office

Introducing Qui and the new working method to employees

ACTIONS

Peter finds a solution to his problem - Qui seems to promote the same ideals he's close to, and thinks the office could benefit from a new organizational arrangement. He places an order to Qui providing it with needed information (employees info, details about the type of support needed at his office).

Peter communicates new dispositions for the company, with the possibility for employees to be in presence, while interns could be participating actively from remote thanks to Qui.

TOUCH POINTS

AR/VR Device, Metaverse

ACTORS

Qui

Peter's Company, Company Employees

EMOTIONS

OPTIMISTIC

UNDERSTOOD

"Finding an offer that shares the same intentions as me is encouraging"

Peter's quite confident a hybrid solution will be more effective than the current one

PAIN POINTS

While the office was previously working fully virtually to avoid putting interns in a disadvantaged position, Peter hopes employees will agree about the decision to work in presence, to have a good and functional work environment and system. Moreover, Peter's worried about the managment of the hybrid modality.

INGIHTS/ OPPORTUNITIES

The permanent team should be more involved in the decision about which solution to adopt, even by just indicating a preference among different options.

SERVICE

Receiving and Set Up

Upon arrangement and notification of expected delivery date, Peter's company receives packages from Qui

Use for Walkthroughs

Qui's tools and boards are being used during design processes for projects the company's working on.

Qui's products are distributed among teams in the company office and are set up, by connecting them to the headsets and following the instructions on usage.

Peter can now work from the office with some colleages, while others are remotely connected and participating in activities. Internships can be easily held from remote, keeping the intern actively involved.

Qui Toolset, AR/VR Device

Project Design Team (In-Presence)

Project Design Team (Hybrid)

OVERWHELMED

ENGAGED

"I'm nervous to see what work going to be like"

"Being able to physically interact with objects, be more connected to the space I'm in and still enabling people to work from remote makes me feel close to my team"

It might take some time to organize activities and teams with hybrid employees and remote interns, since different communication channels are being used and therefore it's important no informatioon is lost in between.

Using AR is a good way to integrate to reality digital information that can connect in an immersive way people situated in different places, in contrast to VR, that could give the perception of a more uniformal channel as it's the same - and completely virtual - for everyone, implies a strong detachment from reality.

	SERVICE	**ON-GOING FEATURE**
PHASES	**Additional Services** Exploring Qui's service, TimeHop	**TimeHop Share Platform** Leaving personal contribution as reflection of a path and means of connection with the community
ACTIONS	During and after Desktop Walkthroughs, Peter thinks it's extremely flexible to be able to interrupt an activity without worrying about how to keep the process going in another moment, or to go back through past DWs thanks to the option to access historical records.	As he procedes through the stages of different projects, Peter releases the approaches he thinks could spark conversations, inspire visions and encourage development in directions different from the ones he took
TOUCH POINTS	Qui Toolset, AR/VR Device, TimeHop	Qui Toolset, AR/VR Device, TimeHop
ACTORS	Project Design Team (Hybrid)	TimeHop Share Platform Community
EMOTIONS	**EMPOWERED**	**MOTIVATED**
PAIN POINTS	*"I feel like I have more control over what I'm doing, which also allows me to be more conscious and focused"*	Being able to share open-ended and undefined processes that later led to definition of project solutions makes Peter feel enthusiastic about sharing creative knowledge
INGIHTS/ OPPORTUNITIES	This service would start working once people are adding elements to it. It's up to the author of contents to decide what to share with others, depending on whether it's a process that should remain private or there's no harm in publishing because it's the starting point for a way wider creative exploration.	

180

reflections

7
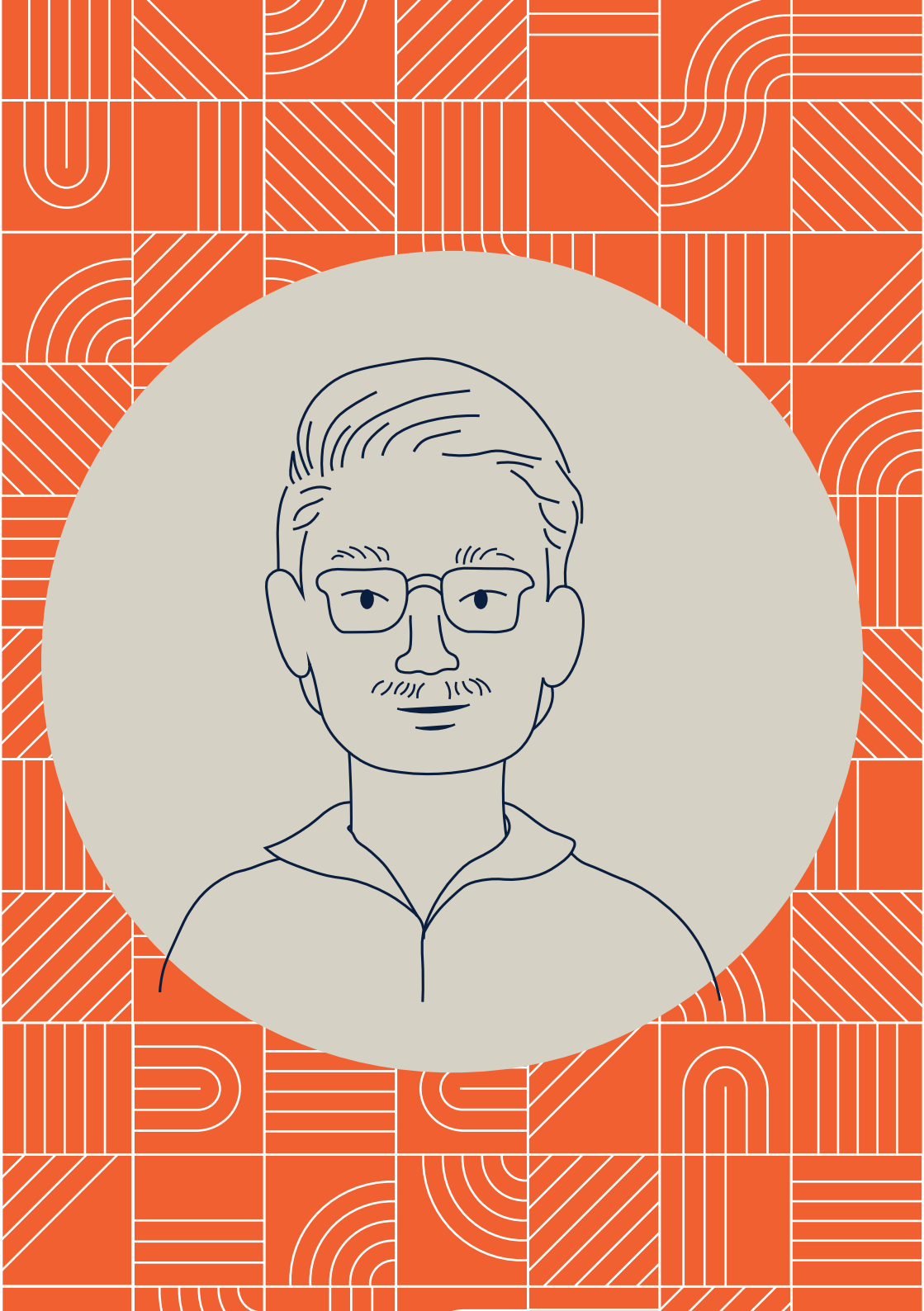
"Okay girls, time for a five-person high-five"

- The Gal Pals
After Every Success, No Matter How Small

Individual Contemplations

With the Wisdom of Retrospect, and Anticipation of our Futures Post-Graduation.

Eline Muijters

My first impression of this course, was really different when looking at it now in the end. I expected it to be more evolved around services and innovation of meaning, without prototyping and technical complexity, which my current master at the TU Delft is about. In the end, I was really happy to apply my prototyping skills while actually building our product, since my favorite part of design is the embodiment where I aim to make the product tangible and realistic. The course was even better than I expected, and I learned a lot from it, especially on the teambuilding side.

During the first ideation phases, we tried to think out of the box and created our own vision of what the world of teaching would look like in 2037. We came up with an augmented and virtual reality vision of internships, where after Meta was introduced, which was mind blowing for us since the whole concept was so similar to our idea. For this phase, I've mainly learned that ideation sessions are most efficient (in case of valuable ideas) when they're spread over a large period of time, while iterating and doing additional research. The research phase helped us to come up with new ideas and narrow it down further. However, in the end we decided to choose one of the ideas we

came up with during our first ideation session before any additional research was done, which of course contradicts with all the above I was saying. This didn't mean we were less excited about the idea, because it reassured us that we already had a realistic vision of the future of education from the beginning.

Since I'm quite familiar with prototyping, this part scared me the least. The process went well, we had to spend a lot of time on filing and beautifying the wooden blocks and boards, but it was satisfying to see the final smooth finish. However, the outsourcing of the materials was difficult, since we had to search the products we needed on Italian websites, and afterwards go to small and typical Italian businesses to seek them. Seen the fact that our group consists of several international students who don't speak Italian, we sometimes had to improvise and be creative, but luckily we succeeded. This was definitely a challenge, but in the end we were so proud of the fact that we traveled around all Milan to find our perfect fit.

By doing this project, I can conclude that I never had experienced such a close group of teammates. Besides the work, we would also spend some quality time together. This resulted for me in knowing that this type of bonding is really important, especially when you're with this team for half a year. The connection I had with previous teammates in Delft, was often superficial and only work related, but I can see now that spending a lot of effort in the bonding of a team, only has its benefits when looking at efficiency, but also

empathy for understanding each other's situations . This team became so special to me, and I'm sure we will have contact also after this.

Morgan Ricard

This course reassured me that I am in the right place for my career, and for my personal development. When I envision my future, I hope for the inclusion of frequent design exploration and ideation with people of differing cultures and backgrounds. If I can continue making choices like the ones which put me in this current position, I will be doing myself a great service. I am leaving this project with renewed vigor for the path I plan to make, with understanding that the road between now and graduation will feel long and tiring, but is indeed quite short. There are two themes from this project which I believe will stay with me the longest; the joys of design research, and the importance of conscientious collaboration.

The four weeks we spent developing research were among my favorite weeks at Politecnico thus far. Every answer lead to new lines of questioning, and rather than causing our determination to unravel, the experience of pulling at the endless strands of information was what brought our amorphous concepts to life. Contextualizing and bringing data to life made strangers feel familiar, finding case studies made the supposedly improbable suddenly look feasible, and sharing findings with collaborators cause ideas to be strengthened by collective knowledge and experience.

My collaborators (my Gal Pals) have been a source of strength since I arrived in Italy.

When beginning this fourteen week journey, I made it a goal to learn more about my relationship to collaboration, to delegation, and to professional balance. This doesn't mean I was successful in avoiding late nights or early mornings, and there were certainly days when I felt creatively drained, but our team questioned our own motivations at every turn. We asked ourselves: to what benefit are we giving our energy? What tasks are most worthy of our time? We had long conversations about what we hoped to improve on, which skills we had yet to test, what sort of material we wanted to add to our portfolios. Who do we want to be when all is said and done? When this project is a memory, what lasting lessons do we hope to bring with us? It was with these answers in mind that we divided tasks, even if those tasks weren't always going to the person with the most experience in that field. It made us all into experts and novices, the experts adding to the guidance of our professors as the novices were the ones to propel their topic of interest forward for the benefit of the whole team. We were also conscientious of each other's personal lives. If someone needed to guard their time, we were supportive of their choice to rest, their choice to look after other commitments, their choice to maintain balance. This meant that the division of labor wasn't consistently equal, but was equitable. As a result, we trusted each other to be honest, and felt safe sharing with one another. This honesty hosted deeper understanding of the value we each brought to the table. Collaboration with this group didn't just mean everyone working together to get things done, it meant working together to improve ourselves and our work along the way.

In the final days remaining as we tie up all loose ends of Qui and prepare to exhibit our work in Milan, I am most of all tired and content. I am a much stronger designer than I was three months ago, with more tools in my belt. I am a better leader, more considerate, more flexible.

I'm better at trusting my colleagues, I don't feel as controlling as I did when I was less confident in the design process. I become emotional when I reflect on how my collaborators have become my close friends, and I'm excited for what comes next. With that excitement in mind, I would like to thank our advisors this final time for the selfless way they made themselves available to us and shared their hard-earned knowledge. I'm very encouraged by this experience, and can't wait to see see seasoned designers my classmates and are becoming.

Stella Russo

Working on this project has represented for me a stimulating opportunity to expand my horizons, experimenting in a new scenario that in the current state sounds extreme and far from an ideal world, yet might become real in 15 years time of technological development.

Designing for a context in which the metaverse has such a massive role in people's life has been a challenge in terms of making the best out of conditions that can feel uncomfortable to think of. I saw the process of ideation as a chance to contribute in a purposeful way to a possible future direction that we have to be aware and conscious about. The solution our group came up with represents the convergence of our personal and collective reflections, in a very rare coincidence of circumstances that resulted in ongoing exciting and sympathetic dynamics of the group.

It was useful to reflect on the theme of internships, on which I now feel much more informed and aware regarding

their importance within the construction of one's career, and I think using technology upgrades to make educational experiences accessible to more and more people is the true value to pursue as designers and people. In this sense, I consider the metaverse useful, yet I would be careful to keep far from a total immersion and dependence on it.

(Saba) Fatemeh Soltanshahi

This was my first product service project that we had to design both, the product and the service. In my last projects, we designed just products or just services and I always felt something is missing, so this is the first time that I felt complete about my university's project. During this project, I could see the parts that I really enjoy doing like researching, and the parts that find it's not adding more to what I already know, like making the product. Realizing this was so valuable for me because now I know that I made the right choice not to continue my previous major and also, I see more options that I'm interested to do as a design career. In the phase of modular 02, me and my other group mates discussed how It would be cool and fun for us to do modular 02 works like doing research for every aspect of our concept, looking for case studies, and doing interviews… as a design career! That was the most enjoyable part for me because I was so curious about our subject and learning more about what you are passionate about makes you feel good.

During this project I learned if we can find the balance between working and spending fun time together, it makes a huge difference for your feeling towards

working on the project, it makes it more like a group activity with your friends. You can have disagreements with your friends but you always try to work it out through talking and explaining and sometimes you simply respect others opinions.

(Annie) Yaan Wei

I was initially rather petrified for this studio course – that was to blame on my metaprogetto experience two years ago in my international exchange period with the horrible teamwork. In my mind back then, the studio is doomed to be devastated, exhausted, I'm not going to comprehend a single point because the lecture was delivered in Italian, I'm going to be the only one – or luckily two - who's working in the team, and the outcome would turn out to be bad. I simply brought my worst imagination and expectation into this class.

But I got slapped in the face – the topic 2037 higher education is intriguing, I'm constantly learning new things owing to the little lectures and tools taught in the class: fishbowl, brainstorm, offering map, CJM, stakeholder map, system map…all the methodologies, equipped with which I always felt much more competent. And I couldn't help but fell in love with all the professors: they're fun, interesting and intriguing. Valentina is super professional, coincide with our imagination towards an Italian-American designer; Prof. IIkka is wise, Prof. Fabio is super cool with his hand and helped us think deeper with the materials and tactile, Prof. Marta helped shaped our minds, Prof. Vanessa and Prof. Sayali is super kind, and Prof. Stefana evoke sparkling ideas. Sometimes they spoke sharp, but truth: 'Why should I use

a plant to remind me that I'm not feeling well? I know when I'm sick!' 'Modular? For the sake of being modular? Oh please.' 'Just don't hide bad ideas behind minimalism.' And these together would always be my awakening quotes in my design path.

And fortunately, Gal Pals turned out to be the greatest team I've ever had in Polimi. We support each other not simply as group mates, but as true friends in real life out of the classroom. I couldn't be more grateful for the pizza and movie nights and outdooring that we shared time together in one of our houses or in the park after we settled the project meeting. I still recall that we sat in Ovalle and proposing the question of 'what do you want to put in your portfolio after 2 years of master' to each of us. Bringing our answers with us, we're more purposeful – we work not hard, but work smart.

I'm grateful throughout this fun process, during which I learned more graphic design/advertising skills and Unity (starting from 0!) from this course and my teammates. Through diving deep into the context of metaverse internship – as we've done tons of research regarding that topic – I deemed hybrid internship as an inevitable trend in the impeding future. With the state-of-the-art technology, I'm curious as well as enthusiastic towards what would happen next, and I'd like to be a part of this arising industry.

special thanks to:

Valentina Auricchio
Louis Baker
Sayali Bharambe
Stefana Maja Broadbent
Sangiorgio Camillo
Claudia Caselli
K.Y. Chen
Marta Corubolo
Joseph DiGioia
Fabio Di Liberto
Vanessa Monna
Aylin Pacaci
Elena Secchi
Y.X. She
Ilkka Jaakko Suppanen
Y.W. Zhang

QUi.

Annex

Three PSS Concepts

Our Initial Product Service Systems.

"At first in the brainstorming phase I was uncertain about our ideas, because we were only able to do limited research beforehand. There were times that I doubted our first ideas would be good enough."

- Saba Soltanshahi
  Industrial Design

We underwent roughly five rounds of rapid ideation surrounding internships in higher education, pushing ourselves to draw from as many directions as we could to sketch and describe various product solutions to the struggles of surrounding student internships on the student, educator, administrative, and company levels. We selected three possible directions which we felt confident could be strong projects to pursue over the coming months. We called our three products LightenUp, Neuralink University, and Take A Seat.

LightenUp

Stress Management for Student Interns

LightenUp is a calendar which allows the user to visualize their rest time. We discovered that students who attempted to undertake internships while remaining a full-time student enjoyed greater hiring rates after graduation, but also higher occurrences of burnout. These students entered the professional world in a state where they were unable to perform at their best ability, at a crucially important moment of their career when they are first making professional connection and at a time when those connections are arguably the most valuable for their future mobility. LightenUp allows students to see how the way they distribute their time impacts their physical and mental health. Each day is represented by 2 columns with 16 waking hours represented by holes through which

UV light passes to nourish the plant bed below. The plant's health represents the student's overall wellness regarding the time they leave for non-work or school related activities. For every hour of the day filled by these activities, a Moon Block is added to block out that hour's light. If a student's schedule is too busy, their plant will be deprived of light energy and will suffer. This visible change in the plant notifies the student that they must change their habits or commitments, so that they themselves can flourish. Once the student lightens their load, the sunlight will once again pass through and allow them to thrive. At the end of each week, the Moon Blocks are removed (similar to how a game of ConnectFour is cleared) and the student refills the spaces with the new week's committed time.
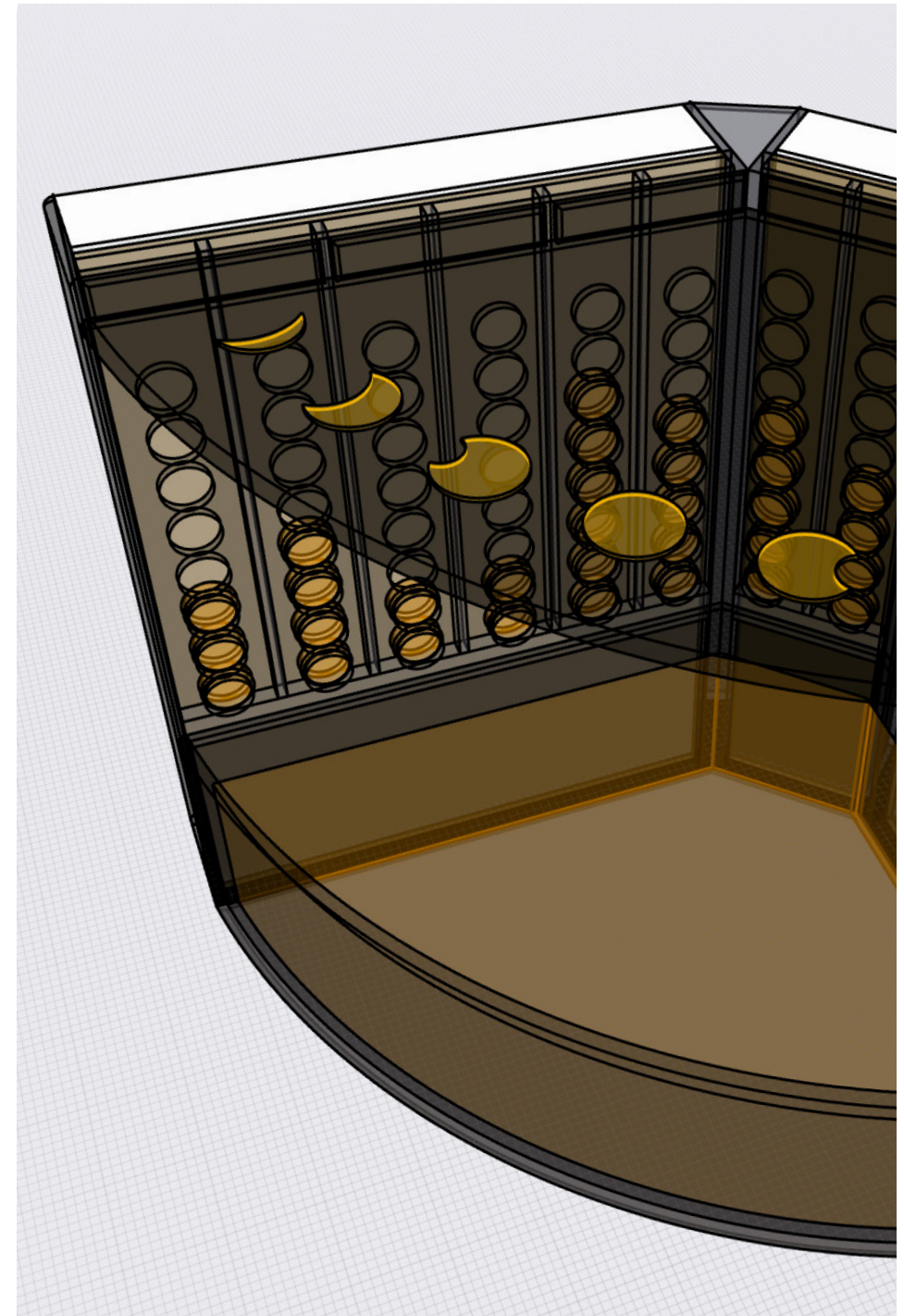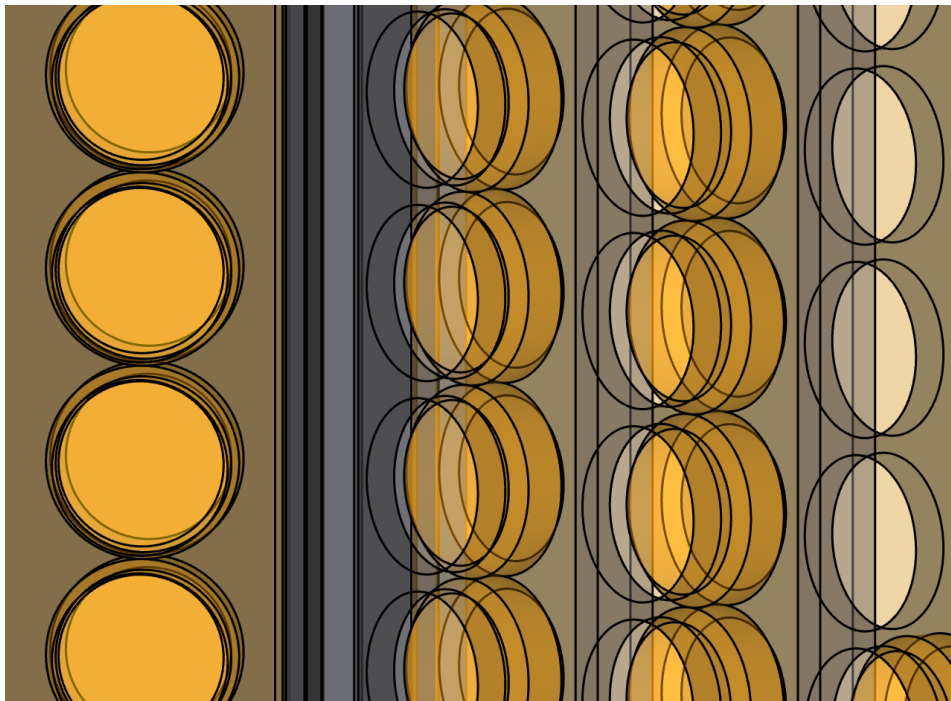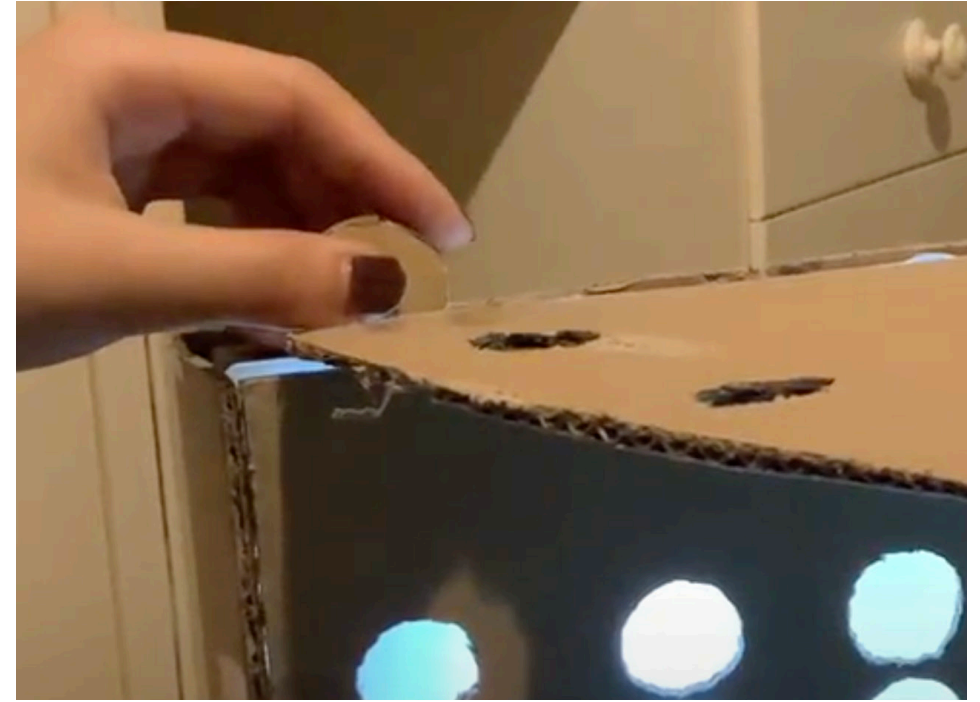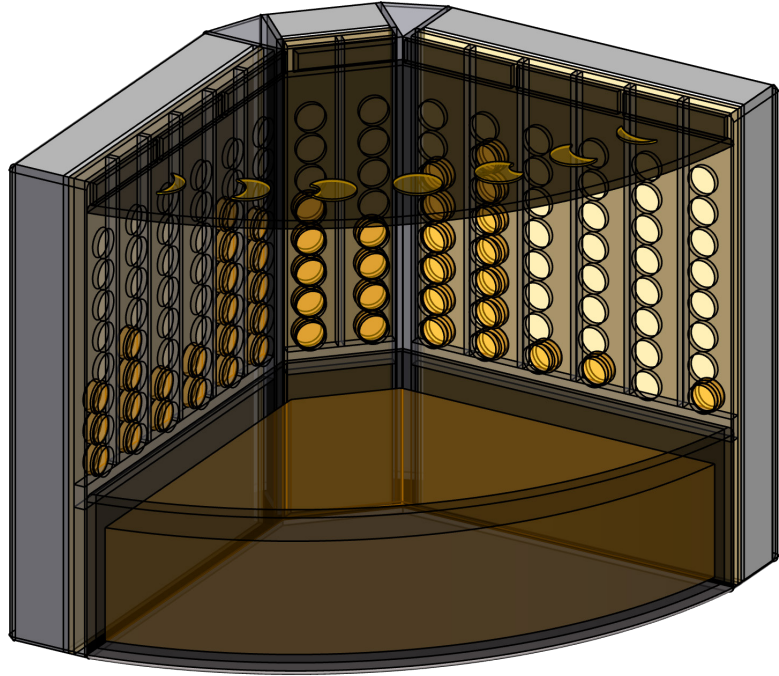
Neuralink University

Virtual Reality Internships

In Neuralink University, students attend hybrid (in-person or remote) practical lessons in the morning and participate in virtual internships in the afternoons. Professors will act as facilitators for learning as they guide students in discussing the variety of experiences and develop shared understanding, and will be continuously constructing adaptive curriculum as the Memory Library grows and the Ai continuously learns.

Micro internships (internships lasting 1-2 weeks) are recorded using Neuralink Memory Storage Technology (NMST) made possible by the Neuralink Brain Chip. These internship experiences are stored in a Memory Library for the university and professors to construct adaptive curriculum which reflect current industry trends and practical information

needed by students entering the competitive job market. Memories from the same or similar company internships are synthesized by artificial intelligence to create cumulative VR experiences, allowing students to go through a full virtual gamebook of the internship experience, choosing their own actions/responses to questions, tasks, and interactions with their virtual colleagues. Their responses are recorded and the sequence of choices are visible to professors in the form of an individualized Decision Map, indicating the students' journey and ultimate productivity/ effectiveness in the virtual office. The Neuralink Brain Chip also records the student's neural responses to the stimuli, indicating the choice's effect on their mental health in that moment and over time. Within a course, all student responses are compiled to find trends and anomalies in the choices made, giving the professor quantitative data (from the decision maps)

Successful VR Internship

Final Outcome of Decision Map

Neural Spikes detcted by the Neuralink Brain Chip

Productivity

Mental Stability

balance

FIGURE A

FIGURE B
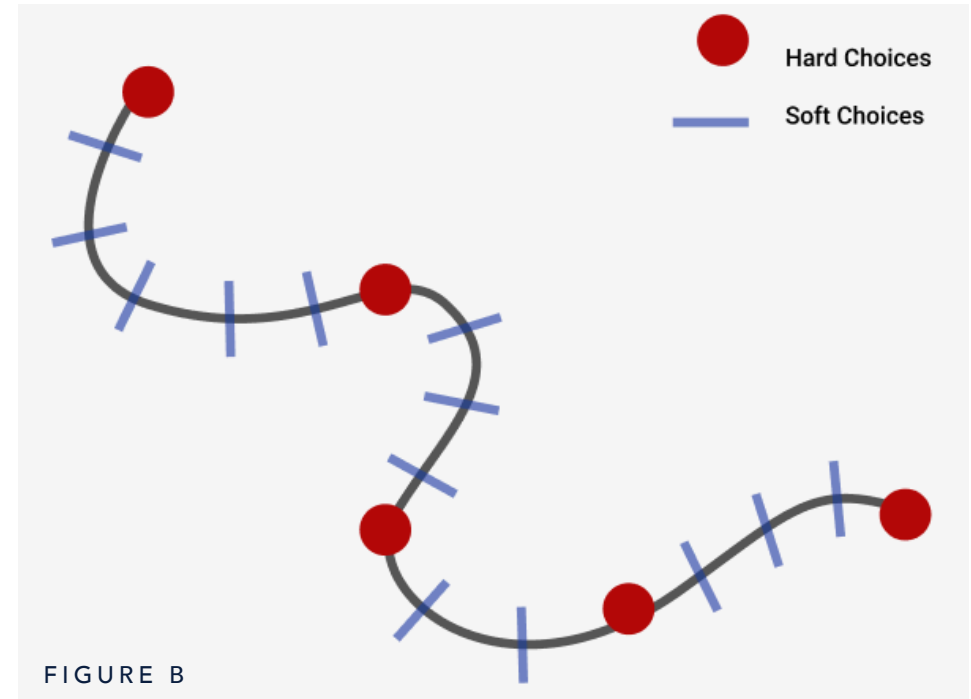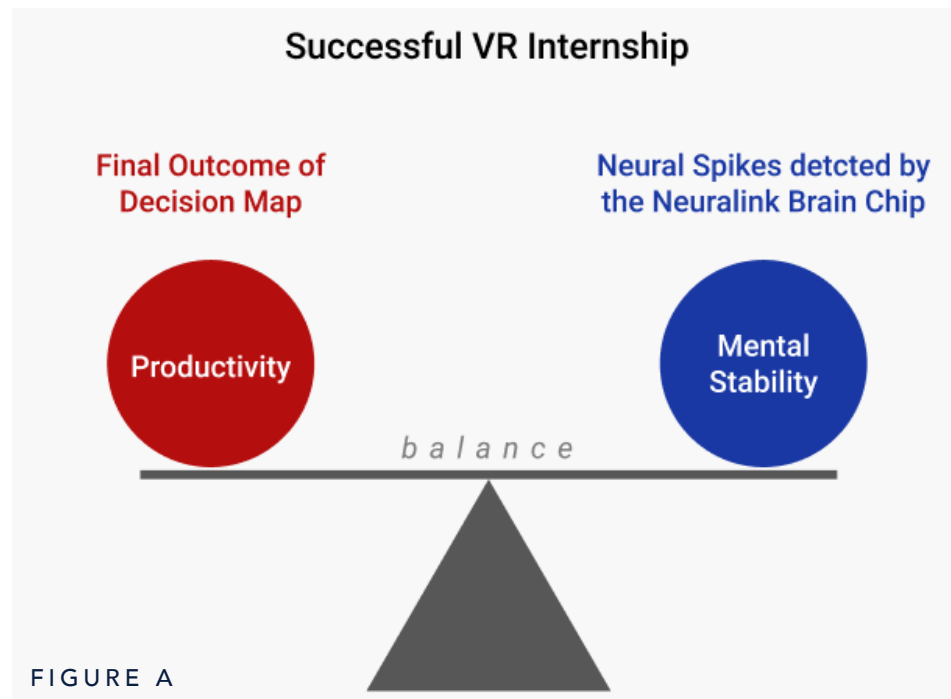
and qualitative data (from the neural stimuli responses). This data will inform the Quarterly Forums facilitated by professors on a quarterly basis, where students come together and have discussions about the various choices made and the resulting outcomes as seen on the macro level by the professor. Professors assign meaning to the data findings, and help students to understand the cause and effect nature of the choices presented to them. They discuss the merits of choices which lead to higher productivity, choices that lead to better mental health, and discover together the threshold between these two dynamics. Success in a VR internship depends on the data range a student lands in for these two variables (productivity & mental stability). (Fig. A) After two years of participation in VR Internships paired with practical lessons and group forums at Neuralink University, students must participate in a real life micro-internship. Their performance will

be evaluated by the company managers and reported back to the university as a final pass/fail grade (students who fail are compelled to try again). These Thesis Internships are then submitted to the Memory Library for future curriculum development and synthesis by the university. A Gamebook is made up of hard interactions and soft interactions (Fig. B). The soft interactions consist of activities like small talk with NPC (non-player character) colleagues, attending a client meeting, or working on a project in a shared office workspace. These interactions will provide stimuli which cause the neural spikes recorded by the Neuralink Brain Chip. There will also be hard interactions, which are direct questions/ choices which the student must give a concrete response to. For example, a boss may approach them and say *"Hello Student X, you've been doing great work this week! We were wondering if you're available to work overtime this weekend. There's*

no additional pay, but you might learn something, and it would make Colleague X notice your dedication to the company." Students will give a specific answer to these requests, which are then recorded to comprise the Decision Map that professors review when assessing them. It's important to note that these decisions have real consequence; for instance, in the example we gave, agreeing to do overtime would add to the time required of the student to complete the internship simulation. Refusal may result in less pleasant interactions with certain NPC throughout the following duration of the time, changing the nature of the soft interaction stimuli. Students must carefully consider all choices made, and the resulting consequences. The accompanying physical products to support this system are twofold: the NU Gloves, and NU Foot Mat. The NU Gloves contain sensors within the palm to orient hand placement, and individual finger caps to track delicate hand movements.

Users can interact with VR surroundings and perform intricate tasks (example: shake a NPC's hand, create sketches in VR, move small items in their virtual environment) as though they are really interacting with objects around them. The gloves are lined with Epidermal VR technology (currently in existence) which allows users to feel simulated impact of objects they come in physical contact with in the virtual space using polymers and actuators. The NU Foot Mat allows intuitive movement through the VR space. Users operate from a seated position, tapping their feet in the center to walk, pivoting the swiveling circle to indicate direction, tapping on the section behind the feet to indicate if they would like to switch from sitting to standing (or vice versa), and moving their feet on and off the box in front to climb stairs in the VR space. These products allow the user to seamlessly and intuitively interact with the spaces and NPC surrounding them while following an AI internship.
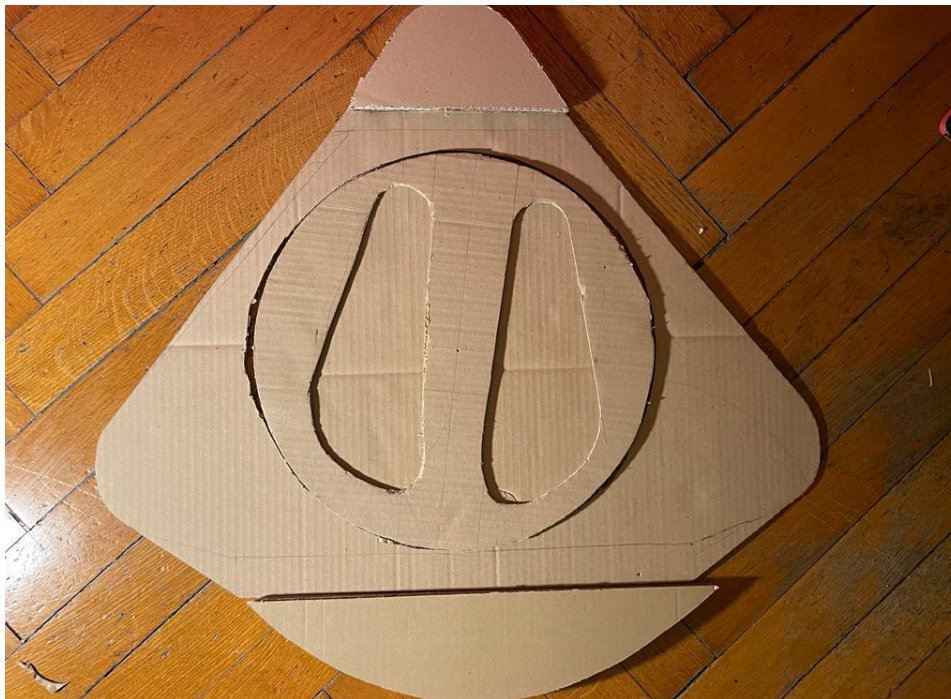
Take A Seat
Adaptable Workspace

Take A Seat addresses the adaptability of a remote student's workspace as they shift between school and internship activities. We can now connect from anywhere. Workplaces and learning spaces of the future will be a decentralized experience, bringing people from across the globe together virtually. The people who will fill roles as students and interns will need their space to adapt to the various activities they participate in throughout a multidisciplinary day. Take A Seat can be flipped to different positions to better suit different roles as people wear different hats for different types of work all working from the same remote place. Upright is perfect for active desk work. On its side, it can be used to lean against when concepting or working more casually in a reclined position. Finally, it can fold into a compact stool, perfect for a small working space or for convenient storage. Along the side, there are programmable LEDs to set a mood, and inside the center module there's a speaker which can play whatever sounds the user desires – calming, energizing, ambient, or musical.

RENDER

LED's

SPEAKER

IN BRANDING COLOR

Interviews

From Education, Technology, and Corporate Sectors.

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(1)
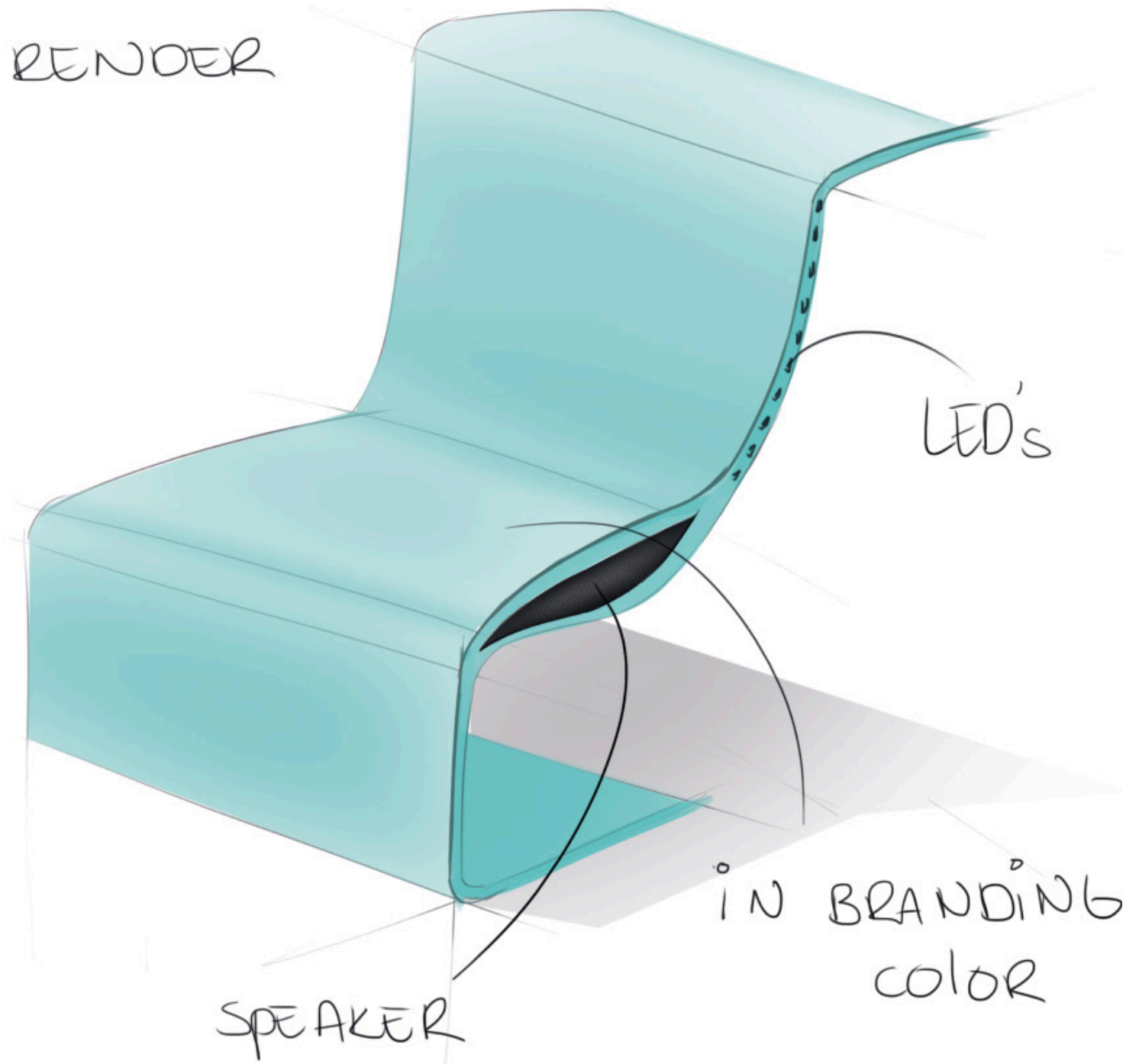
Interview Structures   Education Field

Research Focus

Goals
1. What is gained through experiencing an internship?
2. What are the lasting impacts of an internship?
3. How do they feel about their remote v.s the in person internship experience?

Topics
- Advantages gained
- Lasting Impact
- Struggles/Points
- In-Person vs. Remote

Technical Details
length of interview: 30-40 min
location, modality: Virtual interview,
conducted by phone

Interview type
length Semi structured (planned questions, but questions vary from participant to participant according to their role), probing allowed of interview

S t a n d a r d i z a t i o n

Directivity	high	average	low
high	structured interview		
average		semi structured interview	
low			unstructured interview

Interview questions

Opening
Hello, thank you for accepting to do this brief interview.
My name is [Name], and we'll spend about 45 minutes together talking about remote internship.
As we told you our conversation will be recorded, because what you tell us is important and we don't want to lose a single word. Would you like to remain anonymous, or may we share your identity connected to this interview?

PART 01 internship experience
- How many internships have you participated in? In which companies? Were they in person, or remote??
- Tell me a story about your favorite internship? Was is in person, or remote?
- What are the advantages/disadvantages of in person vs remote?
- What were your expectations going into the internships (in person & remote)?
- Could you describe the most unforgettable day of your favorite internship?(diary)
- What are the lasting impact(s) (positive and/or negative) from your internships(stories)?

PART 02 opinions on our project
(after articulated our scenario)
- What's your initial reaction?
- What parts of your real world experience need to be in the metaverse internships?
- How do you view the feasibility of this project? (what is the most acceptable approach of the concept?)
- Does this future sound appealing?

Conclusion
Thanks again for your availability and willingness to answer these questions.
Your answers will be treated anonymously and will help us improve our reasesrch about remote internships.

Question Path
1. Opening
2. PART 01 internship experience
3. PART 02 opinions on our project
4. Conclusion

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(3)

Interview results -Education Field   Opinions on our project

Q: (after introducing our scenario) What's your initial reaction?

-**Limit the scenario** of your project
-Try to limit your project in **one country**, since there're **time zone problems**; and **limit student group**;
-Add **AR/VR function**, for designers to communicate [face-to-face] virtually;
-design **after considering the customer group**, e.g. how could the disables use your product?

while designers are communicating with client regarding the adjustion of certain objects on the screen, but there're so many objects while speaking of the top left one, and may lead to some confusions and misunderstandings. At this time, I hope sincerely that there's a virtual projection of my clients so that they could point directly at my screen.

Q: What parts of your real world experience need to be in the metaverse internships?

-**AR/VR function** to allow me to communicate with co-workers face-to-face, and it shall wait for my permission to start a VR meeting:(pajamas)
-**A week calendar/time management tool**
-The weekly report is a double-edged sword in my opinion. On the one hand, it helps managers know what you are doing, but on the other hand, it consumes employees' time and experience, and if you do not do anything this week, But you brag and write a lot, which is also a kind of unhelpful formalism for employers.
-**A Smart To-do-list.**

*First, it lists the things I should do every day, and sends them to my superiors/i. Both parties can clearly see what I need to do. After I finish, the system may automatically tick to do list for me, and the leader will confirm the design after receiving the design draft and reviewing it, so that employees don't need to spend a lot of time writing weekly reports!
-In addition (though unlikely), if the boss has a conscience and finds that I have too much work on a certain day, it can help me to reduce some of the workload.*

Q: How do you view the feasibility of this project? (what is the most acceptable approach of the concept?)

-**Go beyond augmented reality.**
-**Think beyond traditional interaction method.**
-AR+VR can be a function embedded in the APP, **but the app may surpass the medium of mobile phones in the future**. It may be projected in the air through my watch or other wearable devices. I don't need to use traditional interactive methods. [Touch the screen] to achieve it, which can be an interaction done in the air.
-Also, many **elderly and disabled people** may not have the ability to [touch the right place of the screen] because of physical inconvenience, limitations in understanding, etc.
-even if our generation gets a brand-new APP, **we also have a [confusion period]**—— Not to mention the difficulty of interaction among these special groups of people.
-Because **the [click] action is already excluding some user groups**, you can consider how to include this group of people, or make a convenient design specifically for them.
-Consider different presentation methods for different groups of people, because many apps are too complicated and cause too high barriers to use. **Your function can be very simple.**
At the same time, I think the keyboard input method cannot be **completely abandoned** (the possibility of infrared keyboard).
-In short, you can't be squeezed too hard **(the phantom can't suddenly appear in front of you, it needs to be approved)**, and pay attention to the **physical and mental health and privacy** of workers.

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(2)

Interview results - Education Field   Profile & Internship experience

Remote Intern Student

K.Y. Chen

Design Master, Age 23

Voice interview, 35min10sec

-Polimi communication master currently, Art bachelor (in China)
-Both remote(Tencent Holdings Ltd.) & in person (XING DONG corp.) design internship experience

Q: What were your expectations going into the internships (in person & remote)?

No big difference between online and offline,but hoping that my level of design can be improved,
-some good workplace habits and interpersonal skills can be cultivated.

Q: Tell me a story about your favorite internship. Was is in person, or remote?

Tencent (Remote internship)
01-Despite remote, had **close contact with colleagues**;
02-**High quality co-workers**
03-Tencent has **great working standard/working rules** for every design task

XING DONG corp. (In-person internship)
01-Peer colleagues: **no generation gap**, friendly co-worker relationship
02-**Amateur clients**: low efficiency while communicating requirements for design;
03-**Large workload** determined by the type of company (B2B)

Q: What are the advantages/disadvantages of in person vs remote?

Remote internships

Advantages
01-**clear working methods** (owing to the regulations provided by the company)
02-**relaxing working environment**

Disadvantages
01-**Working environment too cozy, leading to low working efficiency**
02-Risks of **losing in-time contact** while interns are resting/ slepping(without looking at phones)
03-**unable to work in the headquarters** of Tencent

In-person internships

Advantages
01- **efficient face-to-face communication** (regarding design requirements etc)
02-**relaxing working environment**

Disadvantages
01-poor working method, exhausted working procedures
02-**Too large workload, overworking**
03-**Customer's unprofessional** nature leads to **inefficient communication**

Q: Describe your best day during internship?

"I used 3 days designing, submited and waited till 9 in the evening. My superiors came to me and said [you are doing a good job with this design]. I felt that I got the affirmation of that kind of big company and I was so happy. This determined my **WORK VIEW** and I decided to work for Tencent in the future."

Q: What are the lasting impact(s) (positive and/or negative) from your internships(stories)?

From tencent
-**Learned good working habit:** report every problem to the superior;
-Learned **good working regulations from big companies:** communicate formally by email, not voice/text messages
-**High quality of design owing to the big company** (time for me to create original things)

From xingtong
-Too stressful while working
-But also learned to deal with stress

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(4)

Interview results - Education Field   Profile & Internship experience

Remote Intern Student

Y.W. Zhang

Accountant, Age 22

Voice interview, 29min32sec

-Currently working as accountant of Ernst & Young Corp.
-Both remote & in person accountant internship experience

Q: What were your expectations going into the internships (in person & remote)?

-optimize my resume, and apply to the school later; increase experience;
-learn something offline, but in the remote internships I just want to increase the resume

Q: Tell me a story about your favorite internship. Was is in person, or remote?

I think it's very fun to be lazy and when I was distracted by other funny things at work, and also very happy to deal with some of my clients. Customers will call you. Some clients would also call me [Teacher], which is really interesting.

Q: Discribe your best day during internship?

That day was January 22, 2020. Because we were halfway through work, the team leader told us to go home. Because of the outbreak of the epidemic, we worked on the subway and went home after finishing the paperwork with my two team leaders, and went home to continue our work. When we woke up the next day, Wuhan was closed, and we started to be remote. After the Chinese New Year, we never went to the company site again. The work itself is very ordinary, but this incident is far more impressive than the work. Those two days were too magical. This thing is too big.

Q: What are the advantages/ disadvantages of in person vs remote?

Remote internships
-Remote is totally incomparable. Remote has to do excel alone, and there is not so close cooperation with the team.

In-person internships
-It feels completely different to get to know colleagues up close, and to learn about the business itself; because our industry is generally a project team sitting together, doing their own things, and asking each other directly if they have any questions.
-A better sense of participation

Q: What are the lasting impact(s) (positive and/or negative) from your internships(stories)?

-There is currently no meaningless overtime;
-I have Learned some working methodology It's just beginning now, because I have only trained for three weeks now.

Q: (after introducing our scenario) What's your initial reaction?

-Overall it is good.
-**A proper combination of virtual and reality is good, but I still think that virtuality cannot completely replace reality**, and we cannot completely abandon reality.
-Because **the interaction between people cannot be replaced by virtual ones**. The current network cannot replace reality. For example, when dealing with customers, it is easier to gain the trust of each other face to face.
-For some industries, **some businesses can only be communicated through the most primitive and offline methods** because of **confidentiality**.
-It is indisputable that virtualization is a trend. I don't want to deny it, but I think that **virtuality cannot completely replace reality, yet it is conducive to the convenience of work.** For example, many of our audits cannot be completed remotely because of the fear of data fraud. But some data screening can be done with technology.

Q: What parts of your real world experience need to be in the metaverse internships?

-I think **it's the communication between people**. You can let the customer choose whether to interact with the NPC or not. Because in most cases, it is inevitable that we have to deal with people, but it may not be necessary in the virtual world.
-Virtuality should restore reality as much as possible, but **the interaction between people is difficult to simulate** and may require the power of AI.

Slide (5) — Interview synthesis Education Field

Interview synthesis Education Field

K.Y. Chen

Quality of Communication matters most in internship

The delighters of an internship are: close contact with colleagues; High quality and friendly co-workers, clear working method.

And the disappointments are :Amateur clients\large workload.

Also, interns always find struggles in inefficient communication with clients and with superiors, and difficulties of remaining real-time contact with co-workers during remote internship.

The **effectiveness of communication** during working matters most during internships - **which is what we want to focus on most** in the remote internship.

Satisfaction comes from being affirmed by companies

Interns tend to **feel satisfied after being affirmed by big companies**, and thus determine their **workview** - Which means that we could add more expressions and ways of feedback for the remote interns

Scale the scenario first

it's wise to limit the user group into certain areas/ fields, and limit country range to avoid time zone problems.

For this reason, we are aiming at Italian-based design student interns.

Think of alternative interaction method other than visual/hearing

We're suggested to think beyond AR/VR, and beyond traditional interaction method.

Due to the possible visual/movemental inconvinience of certain groups of people, it's crucial that we also consider something other than [view and touch the screen].

Also, few AR/VR devices aims at people with visual/ hearing disabilities.Touching, as we consider, could be an alternative of the other sences

Convenient, smart but also supplement emotional needs

It's suggested to **add a AR/VR meeting function** in which avatars meet together **after permission**.

A smart time management tool - for instance - **a smart to-do-list** is also appreciated, with the aim of **facilitating better communication between designers and their superiors**.

From the manager point of view, efficiency lies first, but the worker's **physical and mental health and privacy** should also count.

Y.W. Zhang

In-person internship has more sence of humanity through physical touch

The in-person internship enables interns develop more intimate relationship with clients, which is attractive towards interns

Suppliment the missing part of the virtual communications

Due to the quality differences of communication, offline internships provide interns with better atmosphere of actually learning, rather than accumulation of the resume.

Through face-to-face interactions between people is hard to be replaced by virtual ones, we hope to suppliment the missing part -maybe dynamic feedbak or something else - of virtual communication.

(5)

Slide (6) — Interview results - Education Field Profile & VR experience

Interview results - Education Field Profile & VR experience

Remote Intern Student

Y.X. She 🔍

Design Intern, Age 22

Voice interview, 36min16sec

-Goldsmith master 2022, industrial design bachelor in China

-Graduation project regarding VR gaming

Q: What are you currently doing (professionally/educationally)? What attracted you to VR development?

My current internship is UI UX related. Their product is a 2b website, and I am working on a revised design.
Because I was working on the Changsha Kiln and Heishi Project at that time, I wanted to use an immersive way to let people browse the exhibition and gain knowledge by playing games. VR can do both of these things. It has a particularly strong sense of immersion and can make people feel immersive.

★ Q: In your opinion, what is the best and worst thing about VR experiences?

Advantages

The advantage is that it is very real after wearing VR, and it feels like there are creatures walking by. If you are on the bottom of the sea; if you approach a building, you will be shocked by the feeling of a giant archaeture.

Disadvantages

The disadvantage is that you will be dizzy and uncomfortable after wearing it for a long time, so it is not suitable for long-term wear.
Also, **people who feel dizzy with 3d often feel the same with VR**.The principle that it uses optical illusions to make people immersive is also a double-edged sword.

Q: What is your experience/struggles with VR development?

-Two aspects. First, I have to choose a platform to develop game, and the other is that I have to choose a VR device. I have chosen **unity as the development engine.**
There are three types of equipment, one is large, display + helmet + controller; the spatial positioning is very accurate, the cost is high, but the effect is very good, and the head will not be dizzy after a long time; and **the second one is an all-in-one device - a helmet. It is more convenient**. It can be taken outdoors without being in the same room, but it will cause headaches if you take it for a long time. The third type is a simple mobile phone telescope, which can only show simple effects. **The second one is my choice.**

Q: In what way do you think could VR contribute toward people's lives/ society in the future?

The most used scene is still **games and entertainment**. For example, you can play shooting games, in addition to immersive travel, you can travel without leaving home, I think there are more groups in entertainment.

In addition, there is some help in **scientific research or archaeology**; or in the **real estate industry**, you could use VR viewings to **view the houses. Museums** can also have VR to **display exhibitions.**

VR could put the **doesn't-come-yet, the inexistent, and the temporarily unavailable place in front of you**, and you can **experience** these things in advance **without having arrived yet.**

The experience-lise process may be a breakthrough point for VR in the future. Like VR shopping, VR tourism, more and more experiences of VR could be developed and promoted in the future.

(6)

Slide (5) — Interview Structures Technology Field

Interview Structures Technology Field

Research Focus

Goals
How do you see the future of AR/VR and what are your predictions?
How does it feel to be directly reliant on this technology?
How does it feel mentally, emotionally and physically using VR?
What trends are they seeing?

Topics
- What is their predicted future of this technology?
- What trends are they seeing?
- What feelings do they have regarding this tech which will change the world?
- Someone who has the experience of being in simulation programs

Technical Details
length of interview: 30-40 min
location, modality: Virtual
interview, conducted by phone

Interview type
length Semi structured (planned questions, but questions vary from participant to participant according to their role), probing allowed of interview

Question Path
1. Opening
2. PART 01 VR experience
3. PART 02 opinions on our project
4. Conclusion

S t a n d a r d i z a t i o n

Directivity	high	average	low
high	structured interview	average	low
average		semi structured interview	
low			unstructured interview

Interview questions

Opening
Hello, thank you for accepting to do this brief interview.
My name is [Name], and we'll spend about 45 minutes together talking about remote internship.
As we told you our conversation will be recorded, because what you tell us is important and we don't want to lose a single word. Would you like to remain anonymous, or may we share your identity connected to this interview?

PART 01 VR experience
- What is your experience/struggles with VR development?
- What are you currently doing (professionally/educationally)?
- What attracted you to VR development?
- In your opinion, what is the best and worst thing about VR experiences?
- In what way do you think could VR contribute toward people's lives/ society in the future?

PART 02 opinions on our project
(after articulated our scenario)
- What's your initial reaction?
- How do you view the feasibility of this project? (what is the most acceptable approach of the concept?)
- Does this future sound appealing?

Conclusion
Thanks again for your availability and willingness to answer these questions.
Your answers will be treated anonymously and will help us improve our reasesrch about remote internships.

(5)

Slide (7) — Interview results -Education Field Opinions on our project

Interview results -Education Field Opinions on our project

Q: (after introducing our scenario) What're your initial thoughts?

I think it's great.The starting point is fantastic: the uneven distribution of internship resources for people in remote areas like us. Because of the current background of the epidemic, remote internships and office work are common. If the technology develops well in the future, it will be better.

Is it a 'must' to use VR technology for remote internships? I think that device is not available to everyone, so you may want to consider the marketability of the device. You may be thinking about things in the future, maybe everyone will have a VR headset in their home.

Q: How do you view the feasibility of this project? (what is the most acceptable approach of the concept?)

If it's only the things I am currently doing in internships, we don't need VR. I think it is completely possible to remotely work through online softwares. Sometimes when we face to face in a meeting in the office, we will also turn on the ZOOM projection screen, or the collaborative collaboration like Figma.

This industry does not need other scenes, other equipment, but some other industries may need them. For example, when schools need to attend classes, then VR has to be added. At this time, VR may be used, or it may be a virtual screen, where you can click on it with your hands.

Whatever holographic projection, video telephony, remote conferences can be joined together.

Q: Does this future sound appealing?

Generally speaking, it is optimistic, because working from home is really attractive, one is very efficient, one saves the trouble of going to the company, there is no need to gather a group of people to work in the company, and it also saves resources.
But whether the experience is good or bad depends on how the technology develops. If the technology has developed very sophisticated, then people will be immersed in a virtual working environment as soon as they open their eyes, and they may not need a computer for their work. The development of science and technology to that extent may aggravate the existing communication problems between people. People may become more indifferent between people. Sometimes it is better to communicate face to face on paper. Because people may feel lonely after being too closed, and new emotional problems may arise.

Q: Since you're also attending an design internship, what experience would you like to bring into remote internship?

-Re-engrave a screen, a figma. You can show your design draft on it. Because I am currently working in a foreign company, and the product team is in the United States. When they saw it, they commented directly on it.
-If it is remote, you can hope to have such a screen. Every time all departments, design, front-end and products that want to participate in the meeting, everyone can see this screen, which will be better.

(7)

Slide (8)

Interview synthesis Technology Field

Y.X. She

VR Figma and simultaneous remote collaboration

Since the biggest problem of remote internship is to conduct effective communication between colleagues and clients, it will be super useful if an effective simultaneous remote collaboration platform could be built.

Promising future of VR

VR could witness promising future if field of games and entertainment, scientific research, archaeology, real estate industry and museum exhibition.
The biggest advantages of VR is that it could bring the experiences that doesn't come yet, or doesn't exist yet, to the users.

Immersing experience

Wearable devices could lead to headache if wearing for too long, and 3d dizziness for certain people. but also, the emersive experience provided by VR is inconveivable.

(8)

Slide (10)

Interview results - Company Field Profile & facilitation experience

Internship Facilitator

J. DiGioia ♂
Design Lead, Age 50+

🎤 Voice interview, 1hr 12min

- Former professor at Savannah College of Art and Design (SCAD)
- Former Design Lead for SCADPro
- Design Manager at IBM

★ **Q: Can you explain the role you played at SCADPro?**

"I do have some reservations about the fact that these multinational corps. get away with coming out with some really great outcomes for the price they pay for it, and also the students do not get paid for the experience. They give away this expertise for free. I was always questioning the ethics of that particular idea."

Q: Can you explain SCADPro?

PROBE: Can you please share your memories of SCADPro projects you felt were particularly successful?

"Ultimately, I felt that the experience was beneficial for all parties involved. There are some highs and some low points in the midst of all of that, but I never came out of it where the students or the partner went *"Ugh, that didn't work out. I don't think we're going to work with SCADPro again."* Most people enjoyed the experience, from the professors' and students' side many did multiple SCADPros."

★ **Q: How do/did you select partipants / what are you looking for when hiring?**

What is the thinking behind that work?

I want to dig at all the highs and the lows, and that process of how you got there.

Is this work truly yours, or was there an overbearing professor involved? In that case, you're more of a production artist. It might look great, but can you repeat it?

"I need to see you can think through the A-Y process that comes before getting to Z. If you don't have that, I move onto the next person, typically."

Why do you want to work here specifically?

Does the applicant have passion?

Does the person have curiosity?

Q: Can you explain SCADPro?

"SCADPro, as I recall, wasd a partnership program between Savannah College of Art and Design and multiple multi-national corporations. Some I worked with were IBM, GE Transportation, HP... I also did some SCADPros with some local non profits. We also know that companies like Google have worked with SCADPro. What's interesting about the SCADPro model is that it allows companies, in a lot of ways, to leverage the fresh thinking of eager design students briefs that are very often open-ended, and they wouldn't often have their in house design teams or some of their design teams that they contract out with get into, because of the open-ended nature of them. So, these multinational corporations come to SCAD, they have a design brief, there's a whole team there on the SCADPro side, and what typically happens is the ask comes in and the people at SCADPro reach out to several noted professors that they think would be a good fit to run the program depending upon what the general need is. Like if it's UX and UI, or if it's gonna be a branded experience, or it's gonna be like a physical experience; they ask *"what is it going to be?"* Is it gonna be advertising, is it gonna be more design focused, is it industrial design? They also then put out a call for students to join, there's an opening ceremony where all of the SCADPros are revealed and students have an opportunity to sign up for 2-3. If I'm not mistaken, and they get to see who the professor is (or sometimes professors, plural) who they're gonna be working with, and then the roster starts to get built. You have your first day of class, typically you'll meet your partner, whether it's Google or IBM or whoever it might be, and they'll unveil their thoughts for the next 10 weeks. how they intend to be working with the group. typically a professor/manager/facilitator has a rough outline or syllabus with a lot of flexibility built in because of all the unknowns and organic nature of working with a client."

(10)

Slide (9)

Interview Structures Company Field

Research Focus

Goals

1. How did interns bring value to your company?
   - What do students bring to the table? What unique perspectives have you noticed come from students?
   - What are your views on innovative internship models?
   - What do you look for in a student intern when developing a team?
   - Do you see value in restructuring traditional internships? Should companies restructure their current inyternships?
2. How will internships take place at your company over 10 years?
3. How can internships also be done remotely?

Topics
- Innovative Internship models
- Student leadership

Technical Details
length of interview: 30-40 min
location, modality: Virtual interview, conducted by phone

Question Path
1. Opening
2. PART 01 internship experience(company level)
3. PART 02 opinions on our project
4. Conclusion

Interview type

length Semi structured (planned questions, but questions vary from participant to participant according to their role), probing allowed of interview

Standardization	high	average	low
Directivity high	structured interview	average	low
Directivity average		semi structured interview	
Directivity low			unstructured interview

Interview questions

Opening
Hello, thank you for accepting to do this brief interview.
My name is [Name], and we'll spend about 45 minutes together talking about remote internship. As we told you our conversation will be recorded, because what you tell us is important and we don't want to lose a single word. Would you like to remain anonymous, or may we share your identity connected to this interview?

PART 01 internship experience and the role you played?
- Can you explain SCADPro and the role you played?
- Approximately how many SCADPro projects did you facilitate?
- Have you had interns as a design lead at IBM?
- How many?
- Do you have experience arranging remote internships? How do you think can internships also be done remotely? Could you tell the advantages/disadvantages of performing remote/hybrid internships?
- How do/did you select partipants / what are you looking for in interns?
- What do student interns bring to a company (positive & negative)?
- Do you see value in restructuring traditional internships? Should companies restructure their current inyternships?
- How do you see internship the internship model in 10 years?

PART 02 opinions on our project
(after articulated our scenario)
- What's your initial reaction?
- How do you view the feasibility of this project? (what is the most acceptable approach of the concept?)
- Does this future sound appealing?
- How would you advise your grad students if they were doing this project?

Conclusion
Thanks again for your availability and willingness to answer these questions.
Your answers will help us improve our reasesrch about remote internships.

(9)

Slide (11)

Interview synthesis Company Field

J. DiGioia

If the metaverse becomes prominent, then smartphones will become just phones again.

J. Digioia brough up an interesting point, that **if all tech lives in the metaverse, reality outside of VR might actually go back to being non-digital by comparison.** A phone might still exist, but only for making calls and not for the millions of things we use it for currently, as those functions would primarily happen in virtual spaces. He thought **it could be interesting for our team to speak to young gen-z people who have never experienced a world before smart devices and social media,** to hear how they feel about how a hyper digital space might also create a vaccum and distinctly non-digital reality, the likes of which they never would have encountered.

Accessibility of internships from all locations would mean developing the design industry in corners of the planet where it has never existed before, and to have avatars or visually attendable representations of ourselves could effect the prevelence of race/gender/age bias in hiring processes.

Evidence show that **subconscious biases within the people responsible for hiring can create systemic barriers to entry for minorities, limiting a team's potential through irrelevant implicit screening criteria.** The degree of separation in the metaverse would have rippling effects on this phenomenon across office life, not limited to hiring but throughout team dynamics.

The attidues and thought processes behind the work are what matter the most when assessing interns.

J. DiGioia used the phrase **"curiosity and passion"** multiple times during our conversation. He emphasized how valuable this was to a team, and had the potential to provide fresh energy. This tied in directly to design managers being able to see how a young designer thinks through their work. The passion needs to be backed up with process. This is the desirable quality which shows potential to be a strong designer.

A student who has a strong book is what's most important, but having recognizable and respectable companies to list on a CV is often what a student is chasing after. J. Digioia talked about how his recent hires had experience at "local" places before graduation, but their portfolio was what got them the job. This means that for our solution, **having brand recognition for the CV isn't as important as the value the internship brings to the individual and their portfolio.**
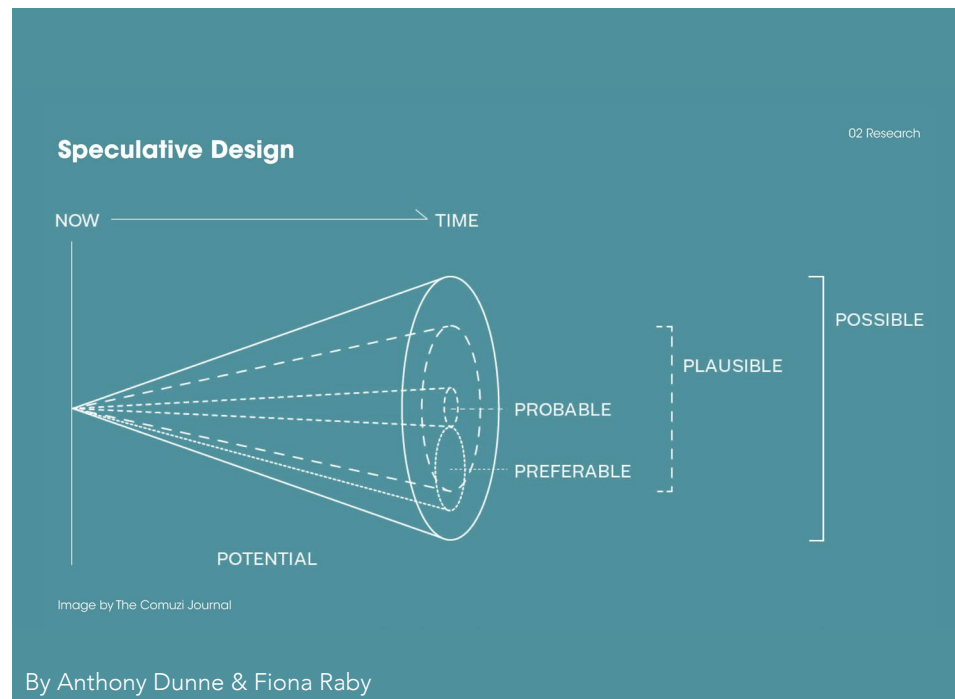
(11)

Design Approach

How Are We Thinking About This Challenge?

Speculative Everything

Anthony Dunne & Fiona Raby

On October 28th, 2021, Mark Zuckerberg The most common goal of modern design roles are to make consumable and marketable goods which make lives easier. Simple to use, eye catching, and worth buying. Speculative Anything points this out as a wrong turn for the design field, and explores the use of design as a tool to make not just producible and consumable items but as a means of stimulating ideas. Design can simply be about speculation of the future. To imagine all that is possible, beyond the probable or even plausible. Within this approch, designers ask "what if?" Not just to themselves, but to their audiences, which is to be distinguished from customers. These "what if" questions are intended to elicit dialog, not always ending with people agreeing with the outcome but to make them question the current conditions around them that could, maybe, lead to that same end. In this process, people discover what sort of future they want for the world we live in.

Speculative Design

NOW → TIME

POSSIBLE

PLAUSIBLE

PROBABLE

PREFERABLE

POTENTIAL

02 Research

Image by The Comuzi Journal

By Anthony Dunne & Fiona Raby

electronic products, aesthetic experience and critical design

hertzian tales anthony dunne

PPPP

Anthony Dunne & Fiona Raby

This model (found in Speculative Everything) was extremely illuminating for our team. It's used for thinking of future scenarios, and explaining their scope to others. The largest cone is what's possible, which includes anything imaginable. Dunne and & Raby say this is the zone of scifi novels, which are wonderful entertainment but are otherwise beyond the applicable use of a designer, The next smallest is what's plausible, which aren't currently available options but which may be with the help of scientific discovery. Inside that cone is the probable, which is what seems like the likeliest occurrence according to current trends. The brown inner cone is what's preferable. As designers, we want to be straddling the difference between the probable and plausible.

Hertzian Tales

Anthony Dunne

This book explores how electronic products and everyday life mix, shaping our experience of the "electrosphere." It belittles the notion of innovation for its own sake, but encourages the consideration of how aesthetics effect human experiences daily. The views expressed in this book are critical but not pessimistic, describing how product design struggles to enter a truly speculative space due to the direct ties it's production line has to the consumer marketplace. It's hard to break away from utility and consider cultural functions for electronics.

"Design is not engaging with the social, cultural, and ethical implications of the technologies it makes so sexy and consumable."

Internship Data

How Interns Live, Work, and Learn.

U.S. Internship Statistics

Louie Andre

- 60% of students have undergone internships (as of 2013)

- 31% begin internships after graduating from college

- There are an estimated 300,000 interns in the U.S. annually

- 50% of students have undergone more than one internship

- 27% of U.S. students have completed two internships

- 13% of U.S. students have completed three internships

- Paid internships are becoming more common nowadays. Under a paid program, interns not only enjoy monthly wages but also other benefits like travel and housing reimbursements.

- 44% of the top-paying internships in the US are in tech companies.

- $0.32/h - $19.05/h – is the median salary of interns, with 19.05 being the mean hourly salary of paid interns who have bachelor's degrees. Interns with a Master's degree earn more than those without, at $35,316 annually. With a Bachelor's degree, interns earn a median annual income of $31,722

compared to $30,106 for interns with an Associate degree.

- 59% of companies help interns with housing and/or travel costs.

- Less than18% of companies offer interns medical insurance.

- As it can be observed, a big part in the number of students in the US (with an average of 300.000 every year) are involved in an internship program, which it very likely to result in being hired for a job, even more if there's a continuity of working relationship with the company before the employment.

- Moreover, it is important to acknowledge the part that receiving a monthly wages plays in the possibility for students to consider an internship, and that still too many of them are underpaid or not payed at all. This also translates into the impossibility to have more than one internship, and therefore to gain experience in multiple fields.

Italian Internship Statistics

Louie Andre

Compared to 2019:

- 18% decrease in activations of internships in the first trimester of 2020.

- 73% drop in the number internships in

Italy between April and June.

- The 12% decline recorded between July and September represents a big recovery compared to the trend of 2020, with 68,514 internships activated.

- Finally, the last quarter of 2020 recorded a decrease of 25.7% compared to the previous year.

- In total it can be observed that the percentage of decrease is 34.1%: this means that little more than a third of the opportunities of internship habitually available in Italy have been cancelled due to Covid-19. This decline in opportunities caused by Covid-19 affects all age groups homogeneously. For women, the number of activations of internship compared to 2019 decreased by over 36% in 2020, while the decline recorded for males remained just below 32%.

Extracurricular Internships

In regard to extracurricular internships (i.e. in favour of people not engaged in a formally recognized training course), the precise numbers are 234.513 internships in 2020 compared to 355.863 internships in 2019.

Curricular Internships

- Curricular traineeships - i.e. those carried out while enrolling in a formally recognized training course - are not in fact counted: there are no regional or national surveys, there is no monitoring by the Ministry of Education. The source, Repubblica degli Stagisti believes they are

between 150,000 and 200,000 each year.

- A research commissioned in 2019 to Repubblica degli Stagisti by the City of Milan has allowed to record over 22 thousand curricular internships initiated by promoters active in the territory of Milan in 2017.

- With the exception of Bicocca university, every other one participated in the mapping: the data includes Cattolica University that has activated 7 thousand internships, Politecnico di Milano with 5.554, Bocconi with 4.112, Università Statale with 3.350, Iulm with 1.147, and Università Vita–Salute San Raffaele with 18.

- This cross-section on curricular internships has made it possible to better understand how universities and other educational institutions manage these "on the job" paths for their students. In over 70% of cases, curricular interns are under 25 years of age. Of the 22,000 mapped, over 7,500 were bachelor students, nearly 12,000 specializing students, and just over 2,000 undergraduate courses, master or doctoral students.
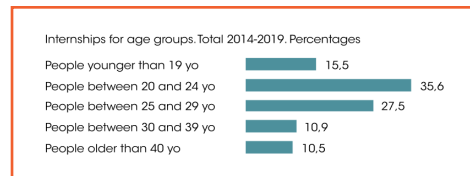
Extracurricular Internship Italy

Anpal

Overview of the total number of pre-pandemic internships

Since curricular internships aren't officially registered on a national level, it is unknown how long the they last, where they are carried out, whether they are more often taken by male or female students, how

often they result in recruitments.

Therefore, we can only rely on an estimate of 355,000 extracurricular interns, and in addition about 150,000 - 200,000 curricular interns, which sums up in an indicative number of half a million internships activated each year in Italy.

Internships for age groups. Total 2014-2019. Percentages

|	
People younger than 19 yo	15,5
People between 20 and 24 yo	35,6
People between 25 and 29 yo	27,5
People between 30 and 39 yo	10,9
People older than 40 yo	10,5

Internships and Employment 2014-2019

surveys carried out months after the end of extracurricular internships have allowed to observe different employment rates:

- 37.9% of interns were employed after 1 month;

- 47.3% of interns were employed after 3 months;

- 53.9% of interns were employed 6 months after the end of their internship.

Employment rates recorded at 1, 3 and 6 months after the end of the experience, for employers who have activated the contract after the internship. Total 2014-2019.

| 44.6 | 39.3 | 31.8 |
| 55.4 | 60.7 | 68.2 |

○ Different employer
● Same employer
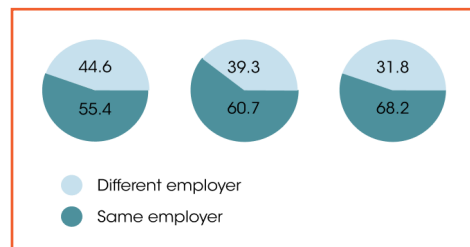
Synthesis

The research suggests that a high number of young students takes part in an internship every year in Italy, with a precise number for extracurricular internships but missing an actual data collecting activity throughout Italy for curricular internships. A large number of interns (53.9%) are hired 6 months after the end of their internship, most of them by the same employer, in the same company.

The decrease rates in internships in 2020 shows the reaction of companies to COVID-19 and the attempt to stop its spread, that resulted in many companies interrupting their internship programs. However, some businesses continued offering internships trying to adapt to new conditions and implementing existing technologies such as collaboration softwares, resulting in what is now known as virtual internships.

Internship Benefits

Why Are They Worth It?

Education and Career Skills Acquired During a Design Internship

Diane Bender

This research followed for Arizona State University observed the results and the feelings caused by internships in students.

A homogeneous sampling strategy was chosen to focus on specific population characteristics and for a richness of information (Patton, 2002). Voluntary and confidential participation was acquired from 24 senior interior design students who had completed an internship during the previous summer with various local, national, and international design firms. Three participants were male and 21 were female. This single set of student participants were all in their final year of a four-year undergraduate degree program. Data was collected six months after the internship experience, thus allowing time for students to reflect on their experience.

Interviewed students perceived satisfaction with the internship experience regardless of pay rate, seeing this as the opportunity to gain job-related skills. The skills that students perceived they obtained in an internship were valued as follows:

1. Real-world orientation

2. Broader view of industry

3. Resume building/Future employability

4. Professional networking

5. Time management

6. Career focus

7. Confidence/Self-awareness

8. Verbal communication

9. Self-reliance/Self-motivation

10. Interpersonal skills

11. Collaboration/Team-building

12. Technical design skills

13. Written communication

14. Exposure to complex design problems

Moreover, industry executives believe colleges should better prepare graduates for success by helping them develop both broad and specific skills.

Synthesis

As observed by the researcher, Diane Bender, students on internships give the most value to acquiring soft skills and having experience in the workspace, interacting with colleagues and superiors. Therefore, internships shouldn't be considered merely for the practical skills, but it' important to acknowledge how many lessons they can learn about the dynamics of working.

Education or Exploitation? Navigating Design Internships in a Field of Precarious Work

Lotfi El Salah

Origin of Internships and the Relationship Between Craft and Apprenticeship

In the medieval Europe, an apprentice had a single master they learned from, and shared time in the workshop which was part of his home. "While the tension between authority and autonomy was maintained by hierarchy, the workshop and guild created social ties that sought to foster the apprentice's learning and to provide stability and support for experienced workers. As learning in many craft disciplines later moved into institutions of formal education, a split formed between learning and labor. While those two activities were practiced in tandem at the workshop, they now took place at the school on one hand, and in industry on the other."

Employability

The thesis reflects on the correlation between internships and employability, saying that "increasing employers' involvement in education is key. Employers should weigh in on different educational processes, including course content, curriculum design, and program accreditation", but centering employability in education runs the risk of putting the interests of employers first: on one hand, students can understand how their skills apply outside of the academic world; but on the other, the goal of a company is profits and not the students career, wellbeing, or the wellbeing of society at

large. "While being able to find paying work after graduation is important for financial security, training students to be appealing to employers can hinder their critical thinking, independent learning, and well-being."

Interns' Experiences

The research involved interviewing interns, according to which, within the area of professional development, positive points included gaining insight into how a studio works, experiencing what a designer job is like, and making professional connections. These insights also informed them on which areas of design they liked or disliked. People also pointed out getting experience on their CV as an advantage, but some interns felt that the projects they worked on weren't suitable for their portfolio, or they weren't credited for their work. Interns wished that employers would be transparent about whether or not a long-term position would be available after the internship finished.

Moreover, interns relationship with the work team greatly affected their experience. Being treated as a team member whose ideas and perspective were valued was instrumental, and so was their ability to be included in client meetings. On the other hand, unfriendly colleagues, being left out or barred from participation, or dealing with inappropriate behavior from supervisors lead to negative experiences for interns. Interns want to be trusted with responsibilities, and not treated as disposable cheap labor.

Income Insecurity: Reliance on Family, Wealth, Debt, Secondary Work, and Grants

84% of respondents to the Design Interns Club reported being either unpaid or paid

less than cost of living in their location

- usually less than 100 euros a month

- design interns rely on a secondary source of income to allow themselves to participate

41% relied on friends or family for financial support, and 25% relied on a second job. Less common sources included bank loans and bursaries. (The Designers Inquiry study report)

Synthesis

Internships tend to be exploitative opportunities for employers rather than educational experiences for students. Companies should work in close contact to educational institution so that students could learn things in order to meet the needs of employers and have a higher chance of having a successful internship and, later, being hired. At the same time it is important for students to be taught lessons that aren't only useful for their future career, but for one's own improvement and cultural enrichment, too.

This is very delicate when it comes to considering soft skills and experience that can be gained during internships as more important than and it is not practical knowledge, that you learn during internships it is easy for companies to take advantage of students, for having free people doing irrelevant work - instead of having to pay someone for all those jobs, and avoiding paying someone to train and follow interns.

Income insecurity also plays a big part for interns - if one needs to rely on secondary income to support poor payment or lack thereof, then the possibility of doing an internship is limited to people who are able to secure secondary income, that

is, people who can get money from their social networks, savings, secondary 35 36 work, debts, grants, or a combination of these - this can often lead to 7-day work weeks.

Critical early-career opportunities exclude low-income students

Lucy Mayo and Pooja Shethji

As the articles report, internships have numerous benefits, including skills training and exposure to a network of professionals. They are an important stepping stone when applying for jobs after college, with 76% of employers citing relevant work experience as the primary factor in hiring decisions. Therefore, internships have become a critical component of students' resumes, even though many college students cannot afford to hold internships.

Financial barriers often prevent low-income students from accessing high-quality internships: they may need a summer income in order to pay for college, leaving the career-rich opportunities unpaid internships provide off the table.

Young adults in their mid-twenties with highly paid, highly educated parents are eight times more likely to attain a bachelor's degree than those from more disadvantaged households.

Students from high-income backgrounds are more likely to hold internships that can help them gain the contacts and experience needed to secure positions in their preferred careers after graduation.

The lack of affordability of both internships and, more broadly, a college education,

leaves low-income students at a significant disadvantage in a competitive labor market.

Synthesis

While there's more and more attention given to internships in order to be hired, rising tuition costs, cuts to state financial aid and increasing emphasis on loans in place of need-based grants put students in debt and cause a consequent growing number of hours students work in attempt to offset this debt, resulting in low college completion rates for those from low-income backgrounds.

As extracurricular activities become more competitive and pre-professional, companies requirements for students become higher, low-income students are excluded from a lot of positions because they don't have access to them - this depends on their time and their need to have jobs in order to support themselves. This is why students need, in the first place, to be remunerated for their work during internships, and in the second place, they need scholarship resources allowing them to consider all the options for their future.

Internship Models

How Do Internships Work?

Perspective in HRD —Virtual Internships During the COVID-19 Pandemic and Beyond

Eric Feldman

This article provides an overview of the current situation as caused by the COVID-19 pandemic. Perspectives are provided by research on virtual intern-ships in general as informed by political theories of space and place.

Benefits and struggles of virtual internship:

- Virtual internships can help interns to obtain work experience despite their location and physical disabilities.

- Benefits to employers include accessing such talent from outside of their geographical region and being able to take on more interns than their space would normally permit.

- Communication is the most important differences of virtual internship; it's also regarded as a chance for enhancing communication skills.

- Virtual internships pose challenges of remote communication, such as team members being spread across time zones; needing to take extra measures to ensure team members are emotionally connected and feel supported while communicating solely via computer.

Training for the Future of (Tele)work.

It would be faulty, however, to frame the question simply as whether virtual internships are an acceptable substitute for training students for future jobs that take place within an office, because recent data show that 43 percent of Americans work from home at least occasionally, five percent work completely at home, and 82 percent want to work from home at least occasionally. With telework on the rise, virtual internships may provide training for virtual careers that require remote working skills and experiences that place-based internships lack.

Synthesis

This article does not purport to provide guidance or a stance on the re-opening of in-person internships. The physicality of internships, especially those with a place-based connection to a city, such as a Congressional internship in Washington, D.C., is a vital component of the overall intern experience and the author looks forward to the return of in-person internships. Rather, here he argue that virtual internships deserve support both as an alternative to the outright cancellation of programs during the current public health emergency, and that these online internships deserve further study beyond this emergency calculation. On one hand,

the permanent continuation of virtual internships could add great value to internship programs especially in terms of access and equity. The fact that "available placements in a student's field of interest or study may not match their own geograph-ical location" is "particularly challenging for students from low social-economic backgrounds, students with care giving responsibilities, disabled students, and online students located in rural and remote locations", all of which are compounded when an internship is unpaid. Virtual internships may not only provide access to a work experience to students in these situations, they could pro-vide work preparation above and beyond traditional internship for the "likely propensity for computer-mediated graduate work environments," specifically, "being able to present ideas, concepts, and work products in a computer-mediated environment".

Micro Internships

Kristina Rigden

This qualitative study determined if secondary student interns develop academic and social growth through a two-week summer engineering internship. This internship required secondary students to work as classroom assistants with teachers learning engineering curricula to teach to K-12 students. The secondary students assisted in the classroom with CAD drawing, programming and constructing robotics and animatronics.

The soft skills gained through participation in the intern workshops consisted of how to study; how to write a resume; how to write and practice an elevator speech; and the interview process for internships, universities, or future jobs. The study skills workshop covered how

to study; find a study environment; make a study schedule; eliminate distractions while studying; the importance of food and break time while studying; and study applications that can help improve study skills. The new knowledge gained as a result of the workshops on college experience consisted of how to apply to college; how to write a personal statement; how to choose a major; and financial aid and scholarships. Participants attended a workshop on how to apply to campuses at the University of California (UC)campuses, the California State University system, and private universities. The workshops of how to study, how to write a resume, and the interview process were helpful to students in developing their soft skills which led to academic growth. Students remarked that they wanted to improve their study habits and now they knew how after the workshop. Students experienced academic growth with new knowledge of the college experience.

Synthesis

The outcomes of the interns during this internship were development of soft skills, increased knowledge and academic growth, and confidence in communication as evidenced by social growth. Soft and social skills were gained even though the internship only lasted two-weeks.

A Gamebook for Education

Mauro Figueiredoa, José Bidarrab

Mobile technologies are becoming very accessible to students, due to advances in the development of technology and a simultaneous decline in hardware costs. In this way, it is relevant to consider the potential of these devices in teaching and learning. This research was designed to evaluate the possibility of creating

gamebooks (gamified books) that are effective in teaching and learning. After analyzing the features available in many free or open tools for making ebooks, it is found out that these tools were not appropriate creating gamebooks. This paper presents a novel interactive book, the gamebook (g-book): a book with a story that can be read sequentially or not. The main difference refers to the ability to choose different paths to the main characters or the unfolding of the history, as happens in games. The designers built a model of a dynamic book that functions as an educational game for "Environmental Studies", aimed at children in the 4th grade, mostly 9-10 years old, in Portuguese schools. The paper presents the design and features of this g-book titled "Adventures in the Guadiana River", implemented with the Unity3D platform. Preliminary tests of their prototypes revealed very good usability and promising pedagogical potential in the proposed models.

Synthesis

The g-book concept has the potential to challenge students to become actively involved in the educational process, as it allows them to try different routes and distinguish what is important from what is secondary, enabling them to create and annotate material from various sources, while also encourages the exploration of new issues.

Balance between education and game-play — A case study of design and optimization of the mini-game book classification*

Jianhua WU1†, Yanan CHEN & Xiangtao MA

Purpose: Based on our experience of designing and testing a computer-based game for teaching undergraduate students information literacy (IL) concepts and skills,

this paper summarizes the basic strategies for striking a balance between education and entertainment for the designers of quality IL games.

Design/methodology/approach: The project team recruited 10 college students to play the game and post-game group interviews revealed problems and optimization priorities. The optimized game was tested among 50 college students. Based on a comparison of testing results of the two versions of the game, basic strategies for designing quality IL games were summarized.

Findings: The following 5 basic strategies can effectively promote combination of education and entertainment: 1) using adventure games to enhance gaming experience, 2) plotting an intriguing story to attract players, 3) motivating players to engage in game play with game components such as challenge, curiosity, fantasy and control, 4) presenting learning materials through game props, and 5) assigning players tasks to be completed with subject knowledge.

Research limitations: The 5 basic strategies have been tested only in the development process of one game, and the book classification knowledge in the mini-game is limited to the 22 major categories of the Chinese Library Classification.

Practical implications: University libraries may refer to our experience to design and utilize educational games to promote the IL education for college students.

Originality value: Few empirical studies tested and summarized strategies for combining learning and fun in the design of IL games for university students. The 5 strategies, which are summarized in the process of design and optimization of the mini-game book classification, are valuable for other designers of IL games.

Synthesis

With the popularity of digital games and the rise of online learning, university libraries have been actively exploring ways to leverage the potential of applying digital games in teaching students information literacy (IL) skills. Some academic libraries in the U.S. have used educational games in the development of college students' IL skills such as retrieving information from databases. However, as the Horizon Report published by the New Media Consortium in 2011 pointed out, there was a lack of quality educational games that constrained the growth of game-based learning.

Balance between the educational aspect of a game and game-play is crucial for educational games, including IL games, since without it games lose their value as an education tool. However, due to insufficient empirical research on this issue, there is a lack of clear guiding principles or strategies for designing quality IL games. Thus, test and summarize some effective strategies for the combination of learning and fun in designing educational games to teach IL skills was aimed.

Technology Predictions

Where is This Going?

The Future of Virtual Reality (VR)

Bernard Marr

Today's most popular VR applications involve taking total control of a user's senses (sight and hearing, particularly) to create a totally immersive experience that places the user in a fully virtual environment that feels quite realistic. Very soon, VR creators will extend this sensory hijacking to our other faculties – for example, touch and smell – to deepen that sense of immersion. At the same time, the devices we use to visit these virtual worlds will become cheaper and lighter, removing the friction that can currently be a barrier. Experts believe extended reality (XR) – a term that covers virtual reality (VR), augmented reality (AR), and mixed reality (MR) – will be one of the most transformative tech trends of the next five years. Previsions for the next five years also include:

- super-fast networking will let us experience VR as a cloud service

- artificial intelligence (AI) will provide us with more personalized virtual worlds to explore, even giving us realistic virtual characters to share our experiences with

- new methods of teaching and learning will become increasingly effective as new technologies emerge

- VR in industry and work

- In total, the value of the market for VR business equipment is forecast to grow from $829 million in 2018 to $4.26 billion by 2023, according to research by ARtillery Intelligence.

- Since Covid-19 hit, all aspects of our lives got disturbed, including the chances to apply for internships abroad. Because of this, many companies are now allowing the chance for remote internships

Synthesis

The current technological evolutions seem to speak to experts a gradual and significant development and use of VR technology, which, given the recent events following the spread of Covid-19, will affect an increasingly relevant portion of the different spheres of human life. We are evolving towards an increasingly connected reality, where everyone and everything is close and accessible. This is a hypothesis for a future prediction, which of course depends on the will of people to transfer everything on a new level, on the considerations about the costs and limits of making everything.

The Future of Artificial Reality (AR)

Mike Bechtel

Artificial Intelligence is not new, it was founded as an academic discipline in 1955 - it's practically as old as the first digital computer. A gradual convergence of cost reductions, performance improvements, and network effects have only recently lead to improving AI as a boardroom-relevant agenda item.

61% of respondents to a recent Deloitte Insights report say AI will substantially transform their industry in the next 3-5 years.

53% of those polled are spending more than $20 million during the past year on AI tech and talent. AI's increasing centrality to business processes, and even strategy, is no longer up for debate.

AI's maturation has been evolving from "curiously interesting" to "organizationally impactful". More and more actions that computers weren't able to do, are now possible for AI: the number of actions has reached a critical mass, shifting AI to the forefront of executives' decision-making and strategic growth planning.

AI's increasing centrality to corporate strategy is also a result of recent developments in Machine Learning systems - as AI graduate from "out-of-band" analyzers to "in-band" actors their value proposition increases markedly. Specifically, organizations have begun to realize that AI can be cost-effectively embedded into business processes.

Machine Learning "Cambrian explosion" (i.e. sudden appearance) is resulting in a radical rethink of what computers can realistically learn. Startups and incumbents alike are teaching machines to emulate an ever-increasing share of capabilities once thought of as "uniquely human." Other frontiers of AI advancement include sensation and discernment (the five "senses"); creativity (reading, writing, and the arts); and congeniality (emotional intelligence).

Synthesis

It is currently being observed that there is a genuine, evidence-based phase shift from artificial intelligence as "cherry-on-top" curiosity to "key ingredient" at leading organizations.

Recent years have been characterized by the proliferation of smart assistants and ambient computing (talking aloud wherever we are and expecting the AI to be there), that are increasingly more capable of understanding human needs and helping in solving them. The likely path forward in the future of AI will be further specialization: it is on the way to a deeper and deeper approach to understanding the functioning of the human brain and its dynamics, also thanks to Machine Learning processes. As their functioning evolves and becomes more refined, the role of AI will gain more centrality and importance: from reactive order-takers to proactive change-makers. AI contemporary burst of enterprise attention is most attributable to the recent point-in-time convergence of cloud-based architectures and open-source AI toolkits, that will lead future evolutions in the field.

Money in the Metaverse

Meghan Bobrowsky

"When we talk about the metaverse, we're describing both a new platform and a new application type, similar to how we talked about the web and websites in the early '90s," - Satya Nadella, Microsoft CEO

More than $80 Billion USD are already being spent annually on virtual goods in videogames, indicating that the marketplace of the metaverse will develop into its own booming economy. The main AR device producers are Oculus ($299 USD); Snap Inc. ($380 USD); Hololens (cheapest model starts at $2975 USD).

The AR and VR global equipment market is expected to grow by more than 50% this year. An estimated 9 million units will be shipped this year according to data from International Data Corp., and an estimated 28.7 million units are expected to ship by 2025. Collaboration and simulation tools are available as a subscription from the company Omniverse Enterprise.

Jensen Huang, Nvidia CEO predicts "that at this point that Omniverse or the metaverse is going to be a new economy that is larger than our current economy." According to Mark Zuckerberg and his vision for Meta, the new online realm won't be controlled by a single company to allow for more competitive growth and product/business development.

Researchers predict business will be conducted through the metaverse sometime in the 2030s. To again hear about Zuckerberg's vision for the metaverse: "Our hope though is that if we all work at it, then within the next decade, the metaverse will reach 1 billion people, host hundreds of billions of dollars of digital commerce and support jobs for millions of creators and developers,"

Synthesis

Part of developing the metaverse is anticipating and nourishing the potential economy which will bloom within it. Similar to business behaviors of the early-mid '90s, companies who get a jump on entering this space will be staking their claim on unmarked territory and endless possibilities for innovation. To understand the likelihood of business flocking to the metaverse once it gets on its feet is to also understand how much this interface will cross over into modern office life. Whether we anticipate the ways we can leverage this new reality to the benefits of higher education or not, it is a probable reality that interns will be entering their professional lives with involvement of the metaverse. It would be ideal if we used this change to open accessibility and learning opportunities while these business ventures arise.

Internship Models

Education and Internships at the University Level.

Politecnico di Milano | Extracurricular or Compulsory Curricular

polimi.it

Description

Internships at Politecnico di Milano are considered to allow students to verify and complete the theoretical and methodological teachings received during the course of study through a concrete comparison with the world of work and with professionals in the sector. Moreover, they help students to orient themself towards an informed future professional choice.

Internships at PoliMi can be extracurricular, and optional curricular traineeship, or a compulsory curricular internship (this is the internship provided for in the study plan of students enrolled in Master's degrees.)

For this last case, the internship can be chosen in three different ways. (1) The student applies for the offers on the University Career Service bulletin board (2) The student identifies a company through personal contacts or teaching staff connections or through independent research (3) The student contacts a teacher of the school available to welcome them in a Laboratory for the performance of an 'Internal Practical Activity'.

At the end of the internship period the student and the tutor of the host institution will have to fill an online experience evaluation questionnaire.

To properly complete the process, the student will have to make an appointment with his academic tutor, present the report in pdf format and take a short interview.

Key Takeaways

(A) Internships can be extracurricular, an optional curricular traineeship, or compulsory currcicular as part of the studyplan for master's degrees (B) The tutor of the host institution evaluates the student after the internship is completed, and the student must have an exit interview with their academic tutor.

Aalto University | Approval and Evaluation

www.aalto.fi/en

Description

Students may have one internship into the master's and the bachelor's degree. Doing an internship is not mandatory. Internship may be included in either major studies or elective studies and get credit for that.

Tasks of the intern have to be related to the field of design. When including the internship as part of the master's degree, tasks of the intern have to give the possibility to apply scientific knowledge of design in the working life and to further deepen the expertise and know-how gained in the degree program. The extent of the internship is 2-10 ECTS. The maximum credits can be earned, if an internship has lasted three months (full time work) and included design related tasks.

image from Polimi

Key Takeaways

(A) You can approve the internship beforehand: Students should approve the internship beforehand with the head of program (B) If the student has not approved their internship beforehand they must first apply for the approval of the head of program (C) Internship is evaluated on the basis of the internship report and internship form on a scale Pass/Fail.

University of Cincinnati | First Co-Op Style Internships in the United States

artsci.uc.edu

Description

An early example of the modern internship model comes from twentieth century USA (University of Cincinnati) Dean of Engineering, Herman Schneider. "Periods of class instruction alternate with periods of work experience. In the early years of the program, the school and work periods shifted week by week, and nowadays, semester by semester. The work is long-term and paid, which helps ensure that companies do not hire beyond their needs and that students have meaningful work."

Curricular internship: A curricular internship allows students to gain real-life experience related to their academic major and earn credit toward their degree simultaneously to assist in building their resume. These internships can be full time or part time, and may occur while they are actively enrolled in regular classes. Credits and monetary compensation earned may vary in accordance to the department and position.

Co-Op: A co-op role is generally is a full time position (40 hours per week) for the duration of a semester. Students in the Co-Op typically don't take classes during the experience. In nontraditional Co-Op positions, time commitment and payment may range according to the circumstance.

Key Takeaways

(A) Credit for an internship will depend on the program and internship's coordinator (B) Students can choose between the two models according to their need and schedule.

Maryland University College | Online Courses and Real-Life Experiences

Journal of Commercial Biotechnology

Description

With the rapid increase in the number of online enrollments, educators are faced with the challenge of ensuring on-campus experiences are available to distant students, which meet quality and accessibility expectations.

The graduate school at the University of Maryland University College (UMUC) offers a fully online master's degree in biotechnology that is specifically designed, with input from industry professionals and an Advisory Board, to prepare students for the workforce. In such a program, the need to have hands-on components in the curriculum is vitally important. Building on the rapid instructor-to-student and peer-to-peer communication channels available through the internet, the UMUC has implemented capstone courses in many of its online programs. Capstone courses provide an excellent opportunity for assessing the ability of students approaching graduation to synthesize experience and knowledge from the program and apply it to a significant, rewarding project.

One of the biggest challenges with online courses is constructing meaningful group projects for part-time students who can be in disparate time zones. They design a capstone course which integrates a semester-long project working with a small biotechnology company in the DC metro area into the course curriculum. The experience and results from these projects have been well received by the participating students and companies.

Key Takeaways

(A) Proving how companies can be integrated smoothly into online learning environments for industry-relevant experience as an increasingly important part of curriculum planning. (B) Ensuring that project descriptions by companies provide enough detail for students to make an educated choice when selecting a project.

image from University of Cincinnati

image from OSSO

VR in Work & Education

How people currently function together in school and office settings virtually and within the Metaverse.

OSSO | Medical Training

ossovr.com

Description

Osso VR is a surgical training and assessment platform that gives medical device companies and healthcare professionals radically better ways to share, practice and learn new skills and procedures using virtual reality. From rare to routine, simple to the most complex. They envision a world where doctors and hospital staff can train whenever and wherever they need, no matter where they wor or the procedure. They are working on the possibility for device companies and medical teams to practice together from anywhere, and empower themselves to grow with accurate assessment and insightful data, so they can deliver better outcomes for patients everywhere.

Key Takeaways

(A) This tool helps improve patient outcomes and empower practitioners with data (B) This is a way to democratize access to training for all practitioners (C) They help device companies introduce new techniques and deliver clinical training at scale.

Microsoft VR & the U.S. Army | Reduced Risk

The Wall Street Journal

Description

Microsoft Corp. is building custom AR headsets for the U.S. Army, expanding the technology company's role as a major government supplier. The U.S. Army deal includes 120,000+ unites of HoloLens technology high-tech headsets to be delivered over a 10-year period; they're intended to make soldier more effective while also keeping them safer. The devices, using what is called the Integrated Visual Augmentation System (IVAS), will allow soldiers to see through smoke and around corners, use holographic imagery for training and have 3D terrain maps projected onto their field of vision at the click of a button.

In a statement, the U.S. Army called Microsoft an "industry leader in developing innovative technology" and said its partnership with the company "illustrates areas that the Department of Defense and industry can work together toward achieving modernization priorities in the interest of national security."

The custom-designed devices will help soldiers make informed decisions as they confront current and future adversaries, the Army said. For example, the headsets will feature night-vision capabilities and allow soldiers to measure the distance between their current location and their team members in the dark, according to Microsoft.

Key Takeaways

(A) Microsoft Corp. has agreed to build custom augmented-reality headsets for the U.S. Army in a deal worth up to $21.9 billion, expanding the technology company's role as a major government supplier (B) The partnership "illustrates areas that the Department of Defense and Microsoft can work together toward achieving modernization priorities in the interest of national security"; C) These headsets are for soldiers to be more aware of their surroundings by exposing them to what they should be paying attention to without putting them in danger first.

Horizon Workrooms | VR Office

meta.com

Description

Horizon Workrooms is a virtual meeting space designed for people to come together to work in the same virtual room, regardless of physical distance. It was officially launched on August 19, 2021 in the Open Beta version by Facebook and Oculus, and it is already available for Oculus Quest 2.

The basic concept is that instead of video-conferencing with a webcam, participants use virtual reality gear to meet up in a VR workspace. The idea is to virtually recreate a meeting room and simulate the same dynamics through avatars, desks, blackboards, screens and chairs. Spatial audio processing renders your colleagues' voices closer or farther away depending on how close you're "seated" to one another in virtual space. It allows for multiple participants to join via VR or video; there's also the usual VR added immersion factor. Workrooms supports the usual teleconference features – whiteboards, screen-sharing, chat, and virtual desks.

image from META
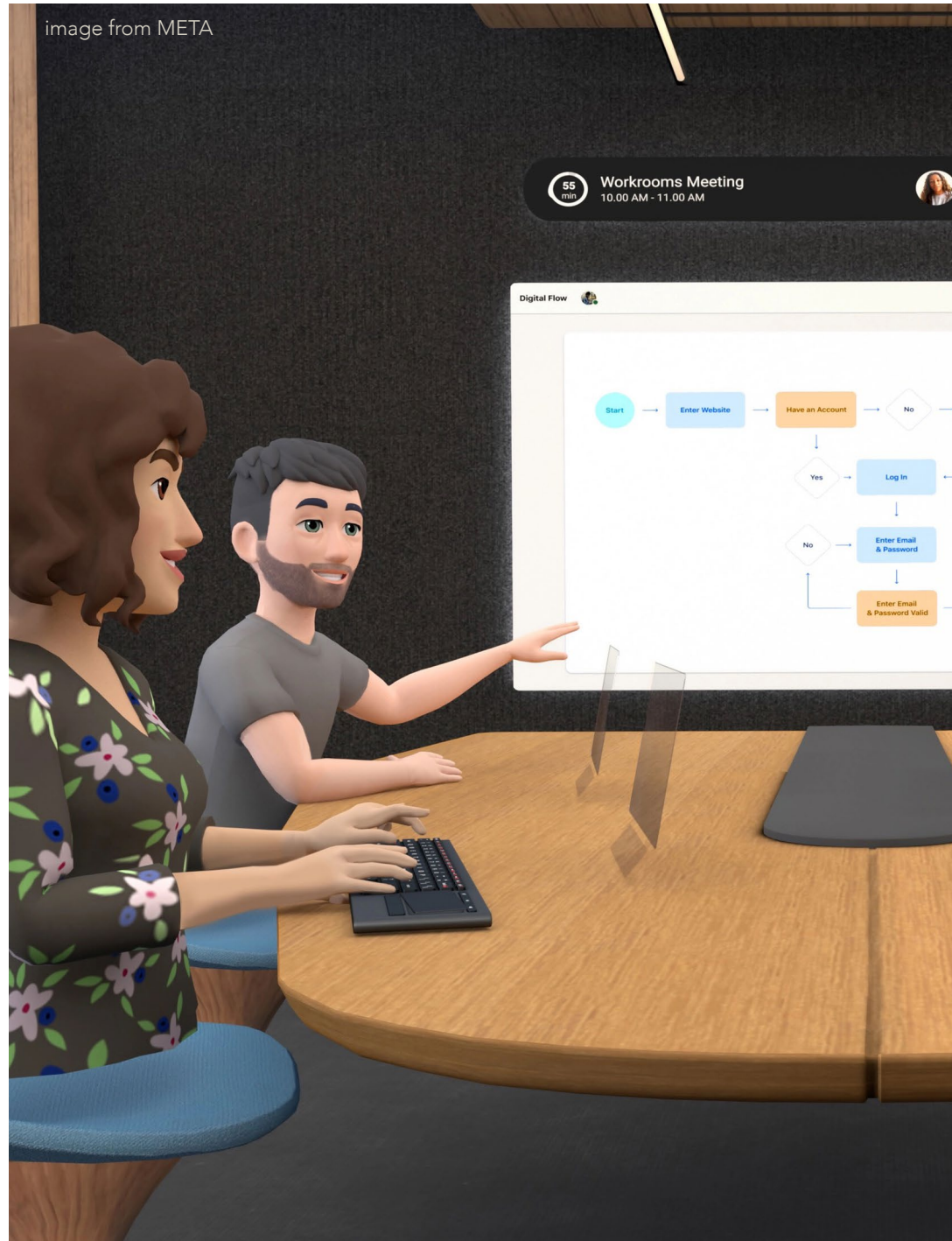
Key Takeaways

(A) The way we work is changing. More people are working remotely and more people want flexible work options but remote working can feel isolating at times (B) Facebook has been already using Workrooms to collaborate and they think it's one of the best ways to work if you can't be physically together (C) It works with VR headset and using features like mixed-reality desk, keyboard tracking, hand tracking, remote desktop streaming,spatial audio and the new Oculus Avatars.

Ludic Learning

Moments of education which are of, relating to, or characterized by play.

image by Julia M Cameron

Curriculum Design | Gameplay

Journal of Organizational Change Management

Description

Paul Darvasi, an high school English teacher, approached Ludic Learning through implementing a video game as a literary text in three senior English classes. Students played the video game Gone Home and were assessed by a series of responses and activities that are in line with the aims of a typical high school English curriculum.

The advantages of introducing gameplay in school is that it can be included in the media studies that, for their relation to current happening, have to accompany traditional studies; moreover, students are very receptive of them, since they're part of their life outside school, and of the fun activities.

Videogames can relate to literature as their dynamics can involve people the same way, and give input to similar observations as when reading a story. "I felt like I'd read a captivating short story or novella, with the key difference being that I was an agent in the narrative." - what the professor said proves that video game staked out narrative territory where its traditional forerunners could not follow.

Some researchers from York University were involved in his class, and were able to observe and record the progress of the students. They concluded that the right games under the right circumstances can prove transformative, even as the professor proceeded largely by teacherly instinct.

Key Takeaways

A) Underlying principles in theories of play contribute to the emergence of the ludic learning space; B) Play in a ludic learning space can promote deep learning in the intellectual, physical, spiritual, and moral realms; C) Learn to play and play to learn.

Neuralink

Developing ultra high bandwidth brain-machine interfaces to connect humans and computers.

image by Anna Shvets

Neuralink | Tech Company

neuralink.com

Description

Neuralink Corporation is an American neurotechnology company founded by a group of entrepreneurs, including Elon Musk, which develops implantable neural interfaces.

Neuralink is working on a microchip placed on the surface of the brain, a "sewing machine-like" device capable of implementing very thin threads inside the brain; the team demonstrated a system that reads information from a laboratory mouse via 1500 electrodes (which is said to be 15 times the current maximum for systems used in human brains), and anticipated that he would begin experiments with humans in 2020.

"We are designing the Link to connect to thousands of neurons in the brain. It will be able to record the activity of these neurons, process these signals in real time, and send that information to the Link. As a first application of this technology, we plan to help people with severe spinal cord injury by giving them the ability to control computers and mobile devices directly with their brains. We would start by recording neural activity in the brain's movement areas."

Key Takeaways

A) The main goal is currently improving people's health; B) Can currently track and predict brain activity in response to external stimuli; C) It's possible to record electrical signals in the brain.

Machine Learning

Computer systems that are able to learn and adapt without following explicit instructions.

image from Hanson Robotics

Sophia the Robot | Social Humanoid Robot

hansonrobotics.com

Description

Hanson Robotics' most advanced human-like robot, Sophia, personifies our dreams for the future of AI. She is the world's first robot citizen and the first robot Innovation Ambassador for the United Nations Development Program. Sophia is now a household name, with appearances on the Tonight Show and Good Morning Britain, in addition to speaking at hundreds of conferences around the world.

Sophia uses speech recognition technology from Alphabet Inc. (parent company of Google) and is "designed to get smarter over time"

Sophia is marketed as a "social robot" that can mimic social behavior and induce feelings of love in humans.

Key Takeaways

A) She has been used for research as part of the Loving AI project, which seeks to understand how robots can adapt to users' needs through interpersonal development; B) These interactions can teach her about what you care about and what you value; C) She already uses her real AI to generate some of her own "ideas", words, and behaviors.

Blender Bot 2.0 | Chatbot

facebook.com

Description

Facebook AI Research has built and open-sourced BlenderBot 2.0, the first chatbot that can simultaneously build long-term memory it can continually access, search the internet for timely information, and have sophisticated conversations on nearly any topic. It's a significant update to the original BlenderBot, which they open-sourced in 2020 and which broke ground as the first to combine several conversational skills — like personality, empathy, and knowledge — into a single system.

The model takes pertinent information gleaned during conversation and stores it in a long-term memory so it can then leverage this knowledge in ongoing conversations that may continue for days, weeks, or even months. The knowledge is stored separately for each person it speaks with, which ensures that no new information learned in one conversation is used in another. By using Machine Learning, the model stays up-to-date in an ever-changing world.

Key Takeaways

(A) The model takes information gleaned during conversation and stores it in a long-term memory so it can then leverage this knowledge in ongoing conversations that may continue for months even (B) The knowledge is stored separately for each person it speaks with, which ensures that no new information learned
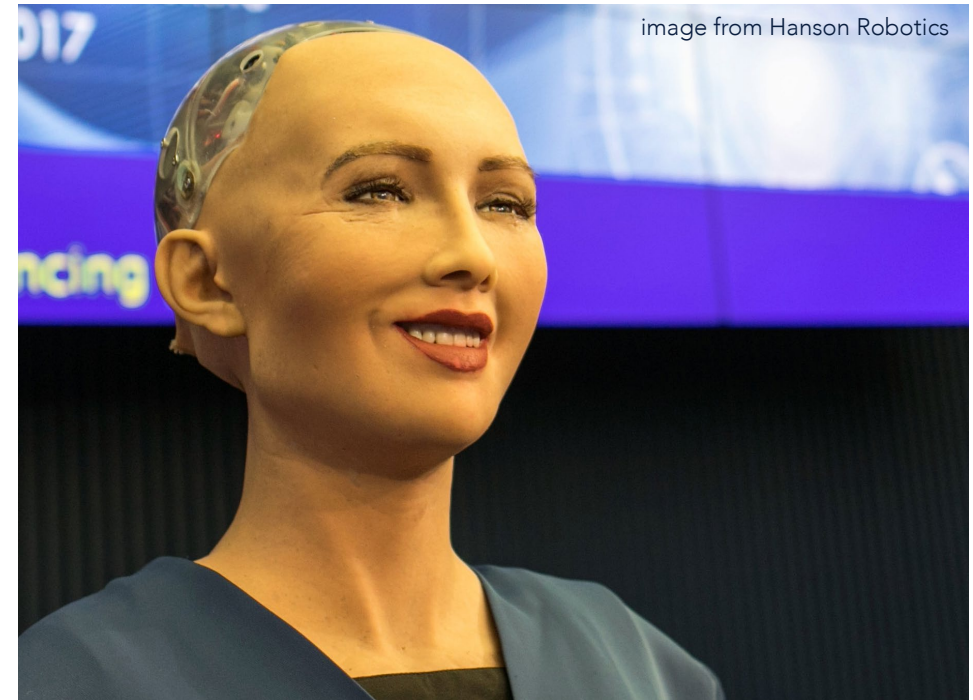

image from ITU Pictures

image by Alok Sharma

in one conversation is used in another (C)
The model stays up-to-date in an ever-
changing world.

Internet Augmented Dialogue | Chatbot

arXiv.org

Description

Facebook AI researchers, Mojtaba Komeili,
Kurt Shuster and Jason Weston has
developed a new conversational agent, that
has access to the largest store of continually
updating knowledge on our planet known
as internet search. Large language models,
even though they store an impressive
amount of knowledge within their weights,
are known to generate plausible looking
statements that are factually incorrect when
generating dialogue, moreover, those
facts are frozen in time at the point of
model training. In contrast, they propose
an approach that learns to generate an
internet search query based on the context,
and then conditions on the search results
to finally generate a response, a method
that can employ up-to-the-minute relevant
information. We find that search-query
based access of the internet in conversation
provides superior performance compared
to existing approaches that either use no
augmentation or FAISS-based (Facebook AI
Similarity Search) retrieval.

Key Takeaways

(A) They are developing a conversational
agent that generate response by
searching internet and use update relevant
information (B) They showed such models
can display more knowledge and generate
less factually incorrect information during
dialogue with humans (C) They showed
such models can display more knowledge
and generate less factually incorrect
information during dialogue with humans.

image from Business Wire
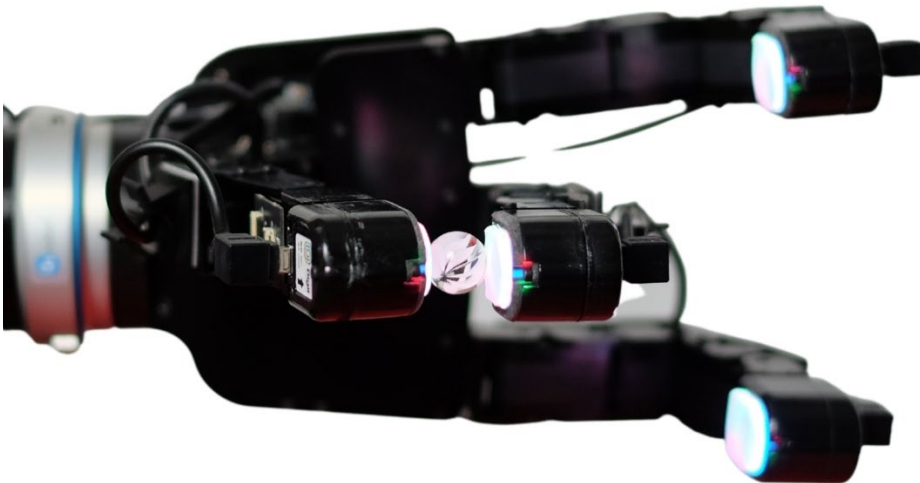
Sensor & Touch Technologies

How does VR *feel?*

Epidermal VR | Medical Application of VR Touch

Northwestern University

Description

Northwestern University researchers have developed a new thin, wireless system that adds a sense of touch to any virtual reality (VR) experience. Not only does this platform potentially add new dimensions to our long-distance relationships and entertainment, the technology also provides prosthetics with sensory feedback and imparts telemedicine with a human touch.

Referred to as an "epidermal VR" system, the device communicates touch through a fast, programmable array of miniature vibrating actuators embedded into a thin, soft, flexible material. The 15-centimeter-by-15-centimeter sheet-like prototypes comfortably laminate onto the curved surfaces of the skin without bulky batteries and cumbersome wires.

An actuator set has been developed that can generate a virtual touch (when wearing a glove). Wireless and battery-free, the device communicates through near-field communication (NFC) protocols, the same technology used in smart phones for electronic payments.

Key Takeaways

A) A wireless and battery-free actuator set that can generate a virtual touch when wearing a glove (B) The set is really small and can be integrated in a thin, soft and flexible material (C) The device communicates through near-field communication (NFC) protocols, the same technology used in smart phones for electronic payments.

DIGIT | Robotics Tactile Sensing

Facebook Ai

Description

Tactile sensing is an emerging field in robotics that aims to understand and replicate human-level touch in the physical world with the goal of making robots more efficient in interacting with the world around us.

Facebook is developing an ecosystem for tactile sensing in robotics for AI to be able to learn from and interact with the world through touch - since touching provides us with information that's not discernible through any other sense (temperature of a matter, its texture and weight, and sometimes even its state).

DIGIT is the tactile sensor released in 2020 to collect and enable the processing of that data. Compared with currently available commercial tactile sensors, DIGIT is significantly cheaper to manufacture and provides hundreds of thousands more contact points. PyTouch is a library of Machine Learning models that make it easier to process high-dimensional and rich touch-sensing data delivered by DIGITs.

Key Takeaways

(A) Advancements in tactile sensing will lead to AI that can use touch on its own as well as in conjunction with other sensing modalities such as vision and audio (B) Advancing the sense of touch for robots will enable them to be more capable, as well as gentler and safer.

Spectulative Design

Dunne, Anthony. Hertzian Tales: Electronic Products, Aesthetic Experience and Critical Design. London: RCA CRD Research Publications, 1999. Print.

Dunne, Anthony, and Fiona Raby. Speculative Everything: Design, Fiction, and Social Dreaming. , 2013. Print.

Internships in the USA - 2020

Andre, Louie. "111 Internship Statistics for 2021: Pay, Benefits & Trends." Financesonline.com, FinancesOnline.com, 21 Apr. 2021, https://financesonline.com/internship-statistics/.

Zuckerman, Arthur. "98 Internship Statistics: 2020/2021 Data, Trends & Predictions." CompareCamp.com, CompareCamp, 12 Mar. 2021, https://comparecamp.com/internship-statistics/.

Griffin, Michael P. "Business Internships." University of Massachusetts Dartmouth, Swansea Publishing Group, 2011, pp. 1–73.

Internships in Italy

Voltolina, Eleonora. "Stage in Italia, Bene Ma Non Benissimo: La Fotografia in UN Rapporto Del Ministero Del Lavoro." Repubblicastagisti, 20 Apr. 2018, https://www.repubblicadeglistagisti.it/article/dati-stage-extracurriculari-2016-rapporto-comunicazioni-obbligatorie-ministero-lavoro.

Voltolina, Eleonora. "Quanti Sono (o Meglio, Erano Prima Del Covid) Gli Stagisti Italiani?" Repubblicastagisti, 4 June 2020, https://www.repubblicadeglistagisti.it/article/quanti-sono-gli-stagisti-italiani-numeri-aggiornati.

Tosi, Giulia. "Secondo Rapporto Di Monitoraggio Nazionale in Materia Di Tirocini Extracurricolari." Anpal.gov, May 2021, https://www.anpal.gov.it/documents/552016/587068/n.14-volume_monitoraggio_tirocini.pdf/ebfa7c09-bbb8-2262-b5ae-62061ec5ee8a?t=1622712458639.

Benefits of Internship Early in Design Education

Bender, Diane. "Education and Career Skills Acquired During a Design Internship." 2020.

El Salah, Lotfi. "Education or Exploitation? Navigating Design Internships in a Field of Precarious Work." Aalto University School of Arts, Design and Architecture, Aalto University School of Arts, Design and Architecture, 2021, p. 60.

Reducing Inequity

Mayo, Lucy, and Pooja Shethji. "Reducing Internship Inequity." 2010.

Jesuthasan, Meerabelle. "Critical Early-Career Opportunities Exclude Low-Income Students." International Journalists' Network, 5 May 2020, https://ijnet.org/en/story/critical-early-career-opportunities-exclude-low-income-students.

Remote Internships

Feldman, Eric. "Virtual Internships during the COVID19 Pandemic and Beyond." New Horizons in Adult Education and Human Resource Development, vol. 33, no. 2, 2021, pp. 46–51., https://doi.org/10.1002/nha3.20314.

Werner, Johannes, and Debora Jeske. "Ten Simple Rules for Running and Managing Virtual Internships." PLOS Computational Biology, vol. 17, no. 2, 2021, https://doi.org/10.1371/journal.pcbi.1008599.

The Future Of Virtual Reality (VR)

Marr, Bernard. "The Future of Virtual Reality (VR)." Forbes, Forbes Magazine, 18 Dec. 2020, https://www.forbes.com/sites/bernardmarr/2020/12/18/the-future-of-virtual-reality-vr/.

The Future Of AI

Bechtel, Mike. "The Future of Ai." Deloitte United States, 27 July 2021, https://www2.deloitte.com/us/en/pages/consulting/articles/the-future-of-ai.html.

The Metaverse

Macias, Miguel, and Connor Donevan. "Facebook Bets Its Future on the Metaverse." WSIU Public Broadcasting, 8 Nov. 2021, https://news.wsiu.org/economy/2021-11-08/facebook-bets-its-future-on-the-metaverse. Accessed 16 Nov. 2021.

Bobrowsky, Meghan. "Tech Giants Gravitate Toward Metaverse." The Wall Street Journal, 10 Nov. 2021, p. 1.

Needleman, Sarah E. "Microsoft Secures $22 Billion Army Contract." The Wall Street Journal, 1 Apr. 2021, p. 1.

Presence Platform

Oculus VR. "Introducing Presence Platform: Unleashing Mixed Reality and Natural Interaction for Oculus Developers." Oculus for Developers, 28 Oct. 2021, https://developer.oculus.com/blog/introducing-presence-platform-unleashing-mixed-reality-and-natural-interaction-for-oculus-developers/.

Presence Platform

Oculus VR. "Introducing Presence Platform: Unleashing Mixed Reality and Natural Interaction for Oculus Developers." Oculus for Developers, 28 Oct. 2021, https://developer.oculus.com/blog/introducing-presence-platform-unleashing-mixed-reality-and-natural-interaction-for-oculus-developers/.

Facebook META

"Introducing Meta: A Social Technology Company." Fb.com, Facebook, 28 Oct. 2021, https://about.fb.com/news/2021/10/facebook-company-is-now-meta/. Accessed 2 Nov. 2021.

Meta, Facebook. The Metaverse Will Be Social – Education. Facebook, Meta, 29 Oct. 2021, https://www.facebook.com/watch/?v=282623437072819. Accessed 5 Nov. 2021.

Meta. "Welcome to Meta: Meta." Facebook.com/Meta, 2021 Meta, 28 Oct. 2021, https://about.facebook.com/meta/.

Oculus

"Introducing Horizon Workrooms: Remote Collaboration Reimagined." Fb.com/News, Facebook, 19 Aug. 2021, https://about.fb.com/news/2021/08/introducing-horizon-workrooms-remote-collaboration-reimagined/. Accessed 3 Nov. 2021.

N/A. "Getting Started with Hand Tracking on Oculus Quest 2 and Quest." Getting Started with Hand Tracking on Oculus Quest 2 and Quest, Oculus, 2021, https://support.oculus.com/articles/headsets-and-accessories/controllers-and-hand-tracking/hand-tracking-quest-2.

Osso Vr Inc. "How It Works: The Leading VR Surgical Training and Assessment Platform." How It Works | The Leading VR Surgical Training and Assessment Platform., 2021, https://www.ossovr.com/how-it-works.

"VR Headsets, Games & Equipment." Oculus, FACEBOOK, 2021, https://www.oculus.com/?fbclid=IwAR2PSf1IAnPOpDhAEjec1-zesUdMi60BsbeFUUKVTNxMP0CdrOFsQDVq0iU.

Machine Learning

Komeili, Mojtaba & Shuster, Kurt & Weston, Jason. (2021). Internet-Augmented Dialogue Generation.

"Sophia." Hanson Robotics, HansonRoboticsLTD, 1 Sept. 2020, https://www.hansonrobotics.com/sophia/.

Weston, Jason, and Kurt Shuster. "Blender Bot 2.0: An Open Source Chatbot That Builds Long-Term Memory and Searches the Internet." Facebook AI, FacebookAIResearch, 16 July 2021, https://ai.facebook.com/blog/blender-bot-2-an-open-source-chatbot-that-builds-long-term-memory-and-searches-the-internet/.

Game Design

Darvasi, Paul. "Prologue: A Video Game's Epic-Ish Journey to a High School English Class." Http://Www.ludiclearning.org/, 5 Mar. 2014, http://www.ludiclearning.org/2014/03/05/gone-home-in-education/. Accessed 3 Nov. 2021.

Jianhua WU, Yanan CHEN & Xiangtao MA. Balance between education and game-play — A case study of design and optimization of the mini-game book classification[J]. Journal of Data and

Information Science, 2015, 7(1): 53-65.

Kolb, A.Y. and Kolb, D.A. (2010), "Learning to play, playing to learn: A case study of a ludic learning space", Journal of Organizational Change Management, Vol. 23 No. 1, pp. 26-50. https://doi.org/10.1108/09534811011017199

Mauro Figueiredo, José Bidarra, The Development of a Gamebook for Education,

Procedia Computer Science, Volume 67, 2015, Pages 322-331, ISSN 1877-0509,

Neuralink Technology

Fadziso, T. (2020) "Why Neuralink will Change Humanity Forever?", Asian Journal of Humanity, Art and Literature, 7(1), pp. 69-78. doi: 10.18034/ajhal.v7i1.518.

"Neuralink: Elon Musk's Entire Brain Chip Presentation in 14 Minutes (Supercut)." Performance by Elon Musk, YouTube, CNET, 28 Aug. 2020, https://youtu.be/CLUWDLKAF1M. Accessed 20 Oct. 2021.

Studio, Play. "Engineering with the Brain." Neuralink, Neuralink, 2021, https://neuralink.com/applications/.

Studio, Play. "Home." Neuralink, Neuralink, https://neuralink.com/.

Innovative Internship Models

Conroy, R., Khan, R. Integrating virtual internships into online classrooms. J Commer Biotechnol 15, 97–112 (2009). https://doi.org/10.1057/jcb.2008.35

Kristina Rigden, Teaching Soft Skills to

Secondary Students Through Internships, International Journal of Education, Culture and Society. Vol. 4, No. 1, 2019, pp. 28-35. doi: 10.11648/j.ijecs.20190401.14

McManus, Brian, and Caroline Golden. Why Elon Musk Created Neuralink (Feat. Real Science). YouTube, YouTube, 11 Jan. 2020, https://www.youtube.com/watch?v=Hw67Hus6gIY. Accessed 3 Nov. 2021.

Sensor / Touch Technology

Calandra, Roberto, and Mike Lambeta. "Teaching Robots to Perceive, Understand, and Interact through Touch." Facebook AI, Facebook, 1 Nov. 2021, https://ai.facebook.com/blog/teaching-robots-to-perceive-understand-and-interact-through-touch.

Morris, Amanda. "'Epidermal VR' Gives Technology a Human Touch." News.northwestern.edu, Northwestern University, 20 Nov. 2019, https://news.northwestern.edu/stories/2019/11/epidermal-vr-gives-technology-a-human-touch/.

Polimi Internships

Politecnico di Milano. "Internships / Traineeships." Politecnico Di Milano: Internships, 2021, https://www.polimi.it/en/current-students/didactic-activities-and-degree-examination/internships/.

Microsoft VR for the U.S. Army

Needleman, Sarah E. "Microsoft, U.S. Army Strike Nearly $22 Billion Headset Deal." The Wall Street Journal, Dow Jones & Company, 31 Mar. 2021, https://www.wsj.com/articles/microsoft-u-s-army-strike-nearly-22-billion-headset-deal-

11617223850?mod=article_inline.

ENGAGE platform

O'Brien, Ciara. "VR Education Launches Engage Virtual Reality for Apple's IOS." 10 Dec. 2020.

Eddy, Nathan. "How Surgeons Use VR Technology to Train and Adapt." Technology Solutions That Drive Healthcare, 25 Nov. 2020, https://healthtechmagazine.net/article/2020/11/how-surgeons-use-vr-technology-train-and-adapt.

Hayden, Scott. "Social VR Platform 'Engage' Generated over $1.4m in Revenue in First Half of 2021." Road to VR, 30 July 2021, https://www.roadtovr.com/engage-vr-education-revenue-h1-2021/.

Engage. "Engage - Virtual Communications Made Real." VR Education Holdings, 5 Nov. 2021, https://immersivereducation.com/.

TESLASUIT

TESLASUIT. "Full Body Haptic Feedback & Motion Capture Tracking VR Suit." TESLASUIT, 23 Feb. 2021, https://teslasuit.io/.