

# INTERACTION DESIGN *in the era of AI\**

MOMO ESTRELLA  
SENIOR DESIGN LEAD

IDEO

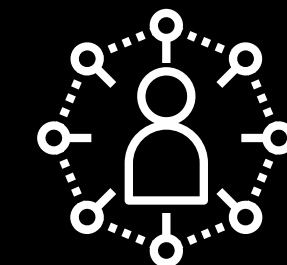
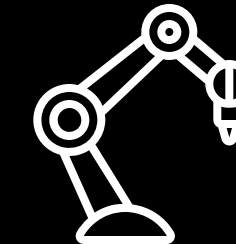
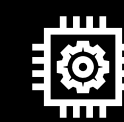
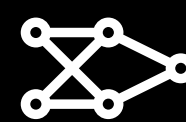
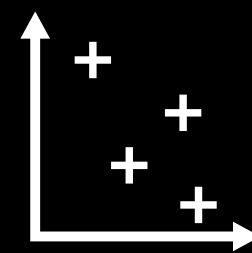
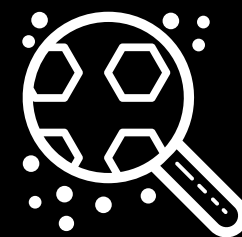
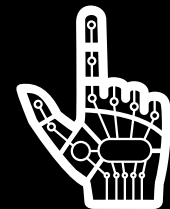
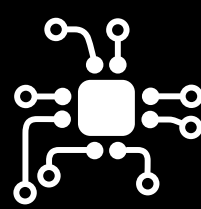
INTERACTION DESIGN

*our era*

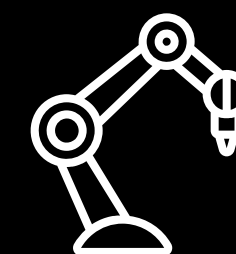
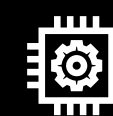
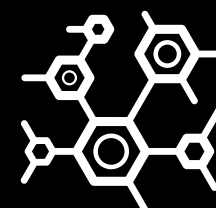
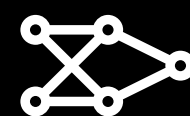
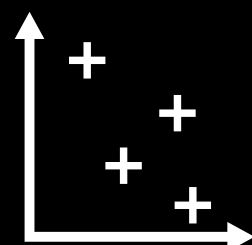
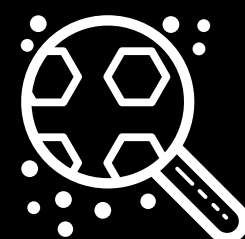
AI



# ARTIFICIAL INTELLIGENCE



AI. Artificial Intelligence. – A term composed by several strands ranging from computer vision, pattern and image recognition, machine learning, natural language processing, to neural networks and many others.

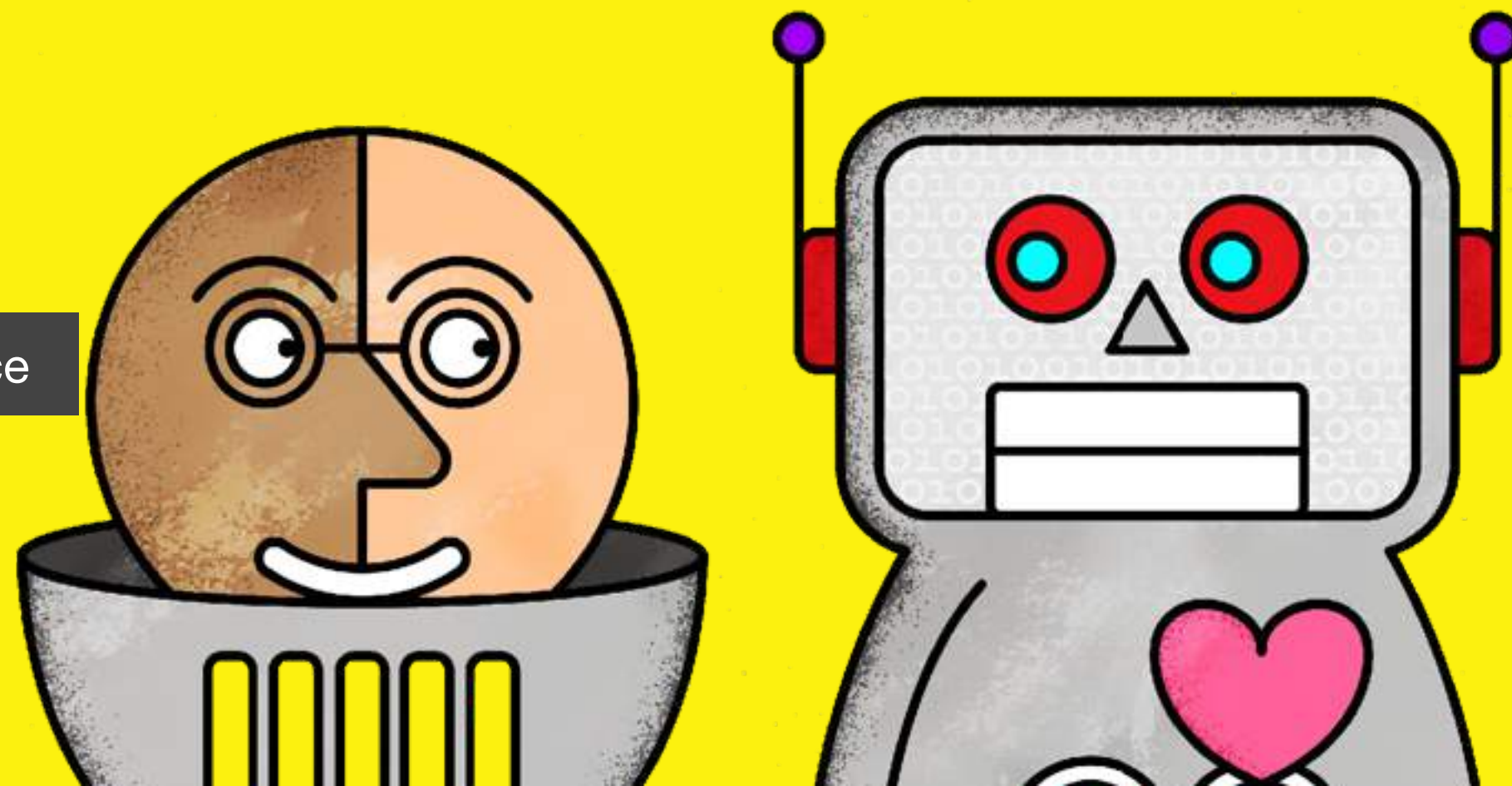


Some of these strands of work have been around for decades. For instance, the Discriminant Analysis method, introduced by Ronald Fisher in 1936 is foundational in what we call Machine Learning. Over the years many of these strands of work have become routine technology; a point in which they stop being considered part of AI. For example: optical character recognition.

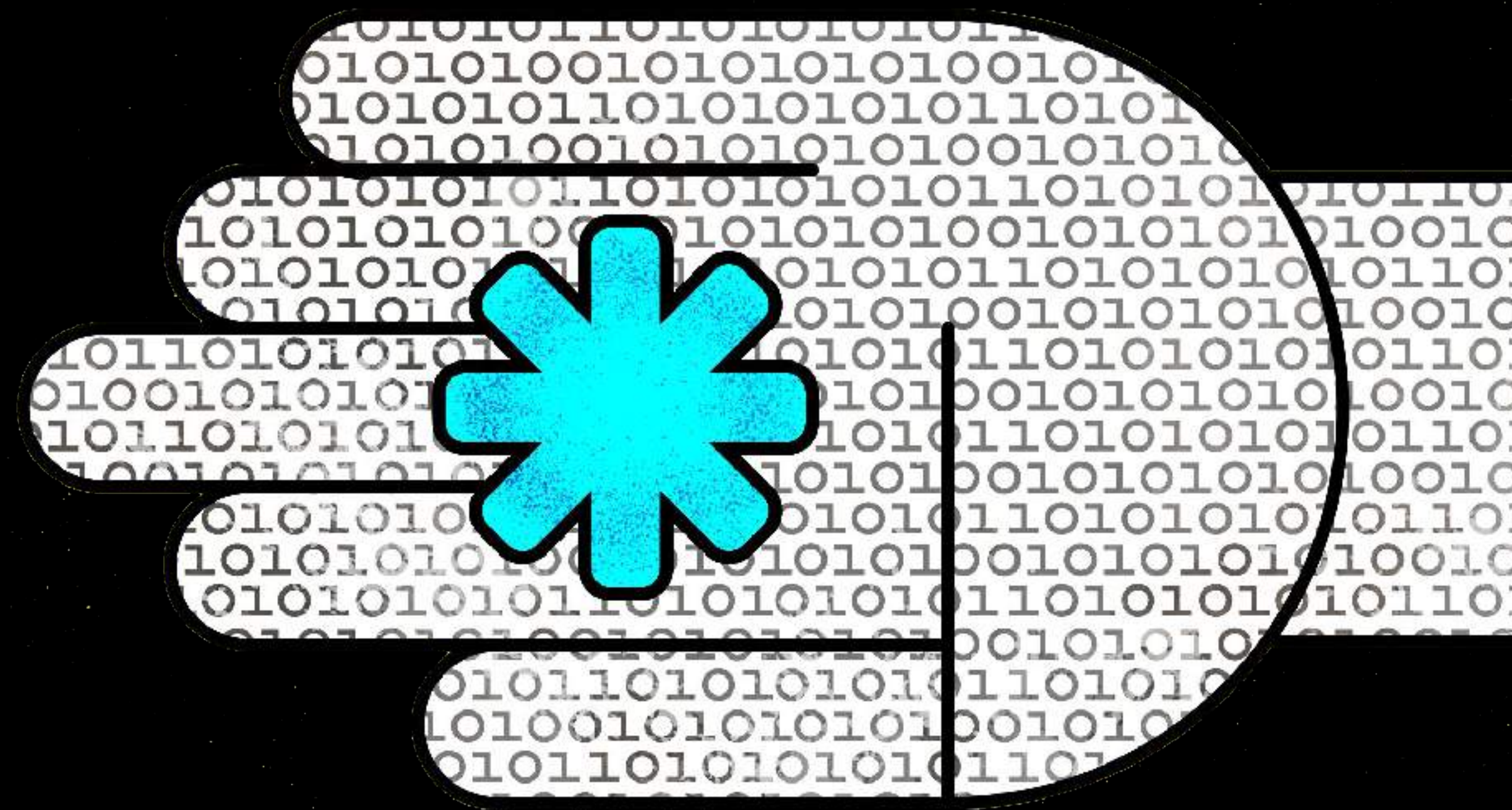
# AUGMENTED INTELLIGENCE.

But I'm more interested in AI – Augmented Intelligence

IDEO

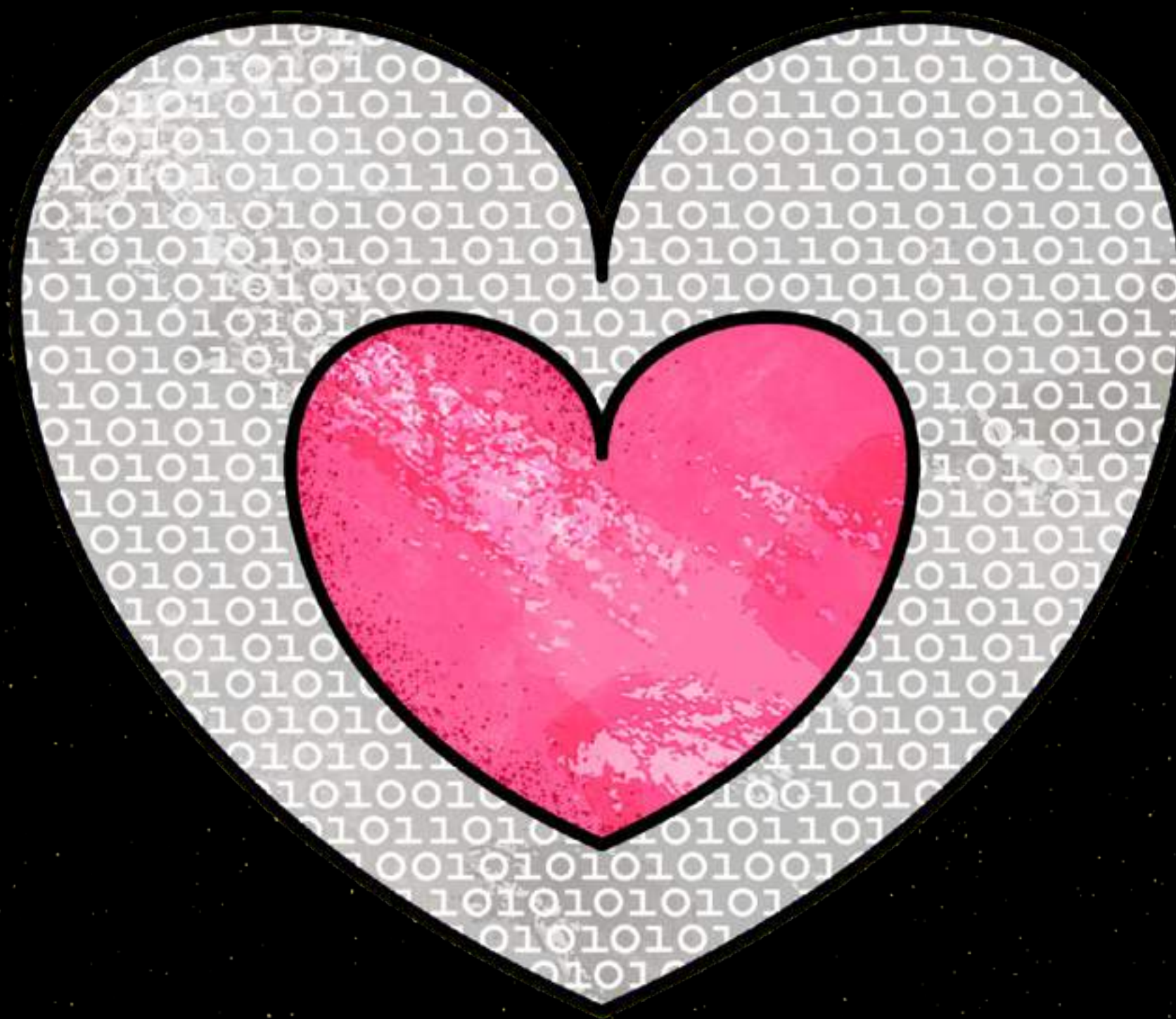






Augmented intelligence is about extending the capabilities of humans in a way that feels natural. If the intelligence of our technology feels artificial, it will never stick. And if technology replaces human, it definitely would fail. It's not about replicating or replacing humans with machines, but designing how machines can serve people.





We must pursue creating new intelligent products, services, and systems that adapt to people's individual preferences, and that continually evolve to fundamentally meet human needs.





This paradigm of thinking, in using artificial intelligence to extend human capabilities, fueled the growth of Rise Science, a sleep analytics startup that specializes in applying the science of sleep to enhance elite athlete performance. Rise Science partnered with IDEO to increase stickiness of their service.





## SLEEP COACHING



Hey Derek! My name is Leon and I'll be your Rise Science sleep coach.



I'll be here to support you over the next couple months.

That's chill.

Right now I'm tailoring your custom sleep plan. I want to make sure we set realistic goals to start.

How much time do you typically need before you have to be

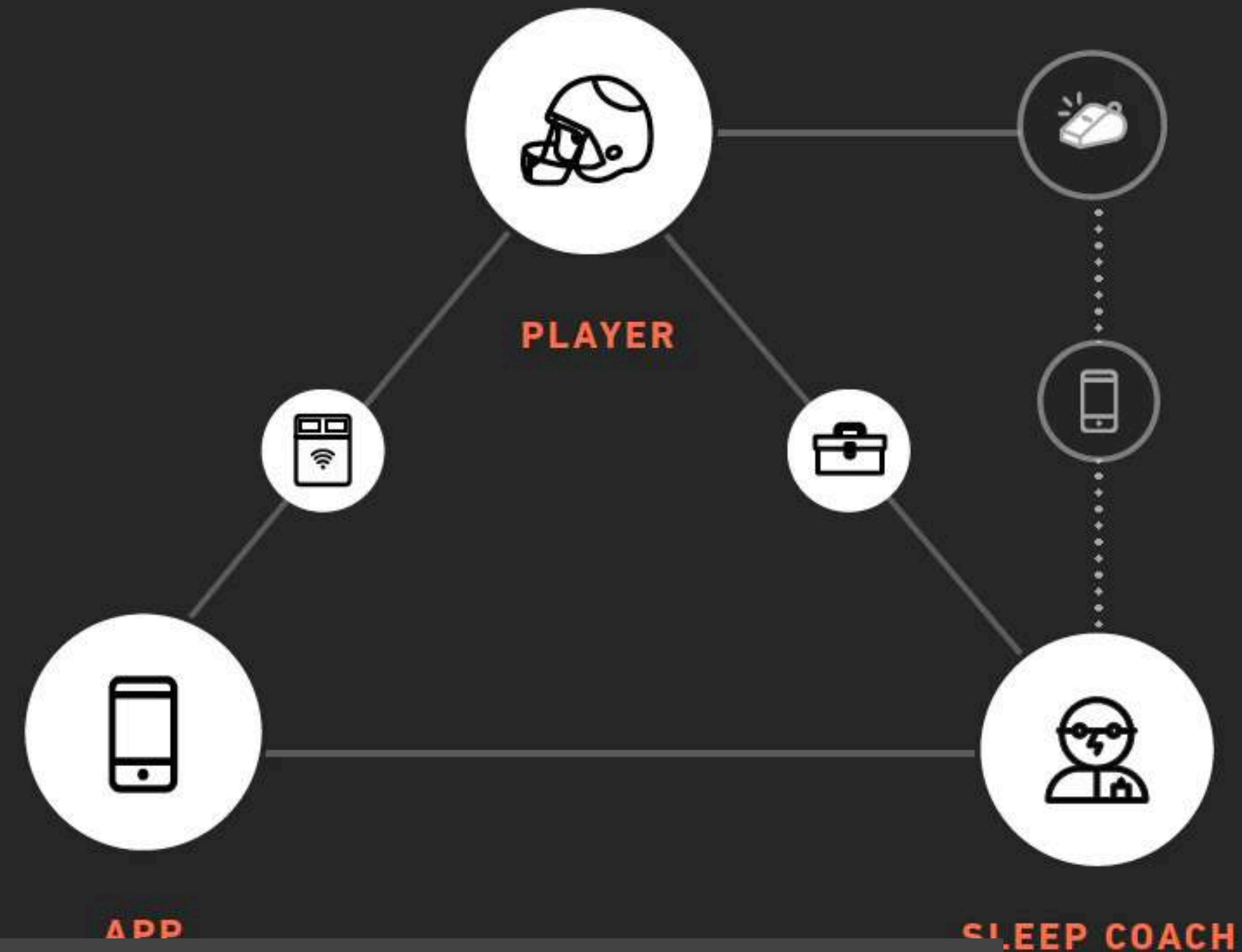
About 1 hour.

Great! In 3 days we should have

The Rise Science team had originally thought that they needed improved data visualizations, but in talking to high performance athletes, we uncovered a key insight: that app stickiness was driven by their coaches' personalized messages and adaptive alarms, not access to better charts or graphs.



# SYSTEM ARCHITECTURE



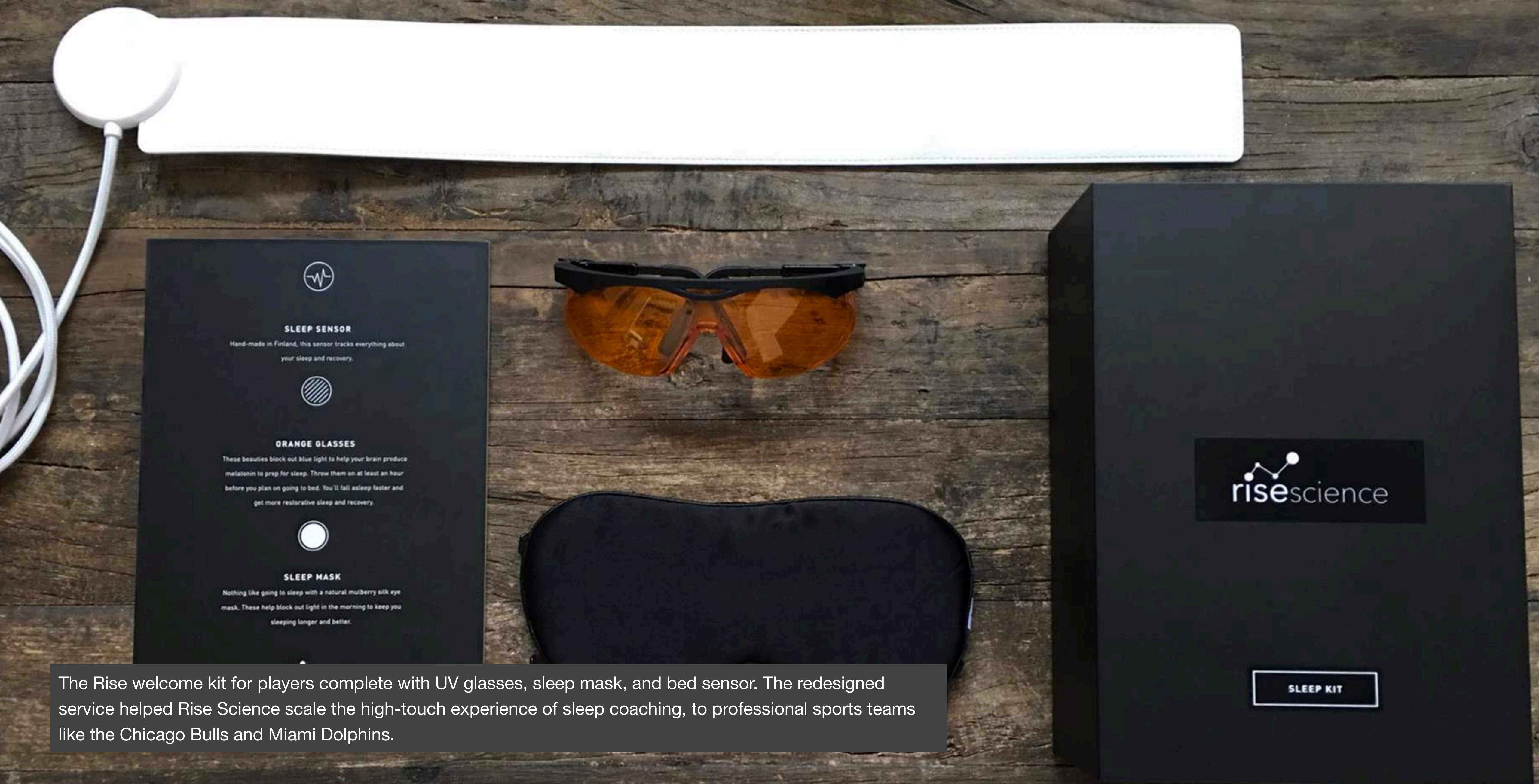
From these discoveries, we built the service to include a scalable chat function and an intelligent alarm clock that adapts to individual athletes. The Rise sleep coaching services seamlessly combines human and digital touchpoints.





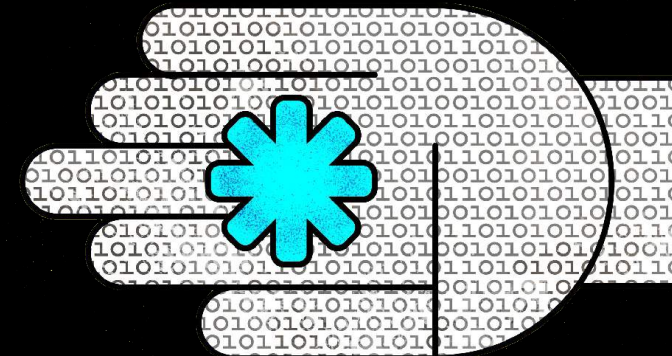
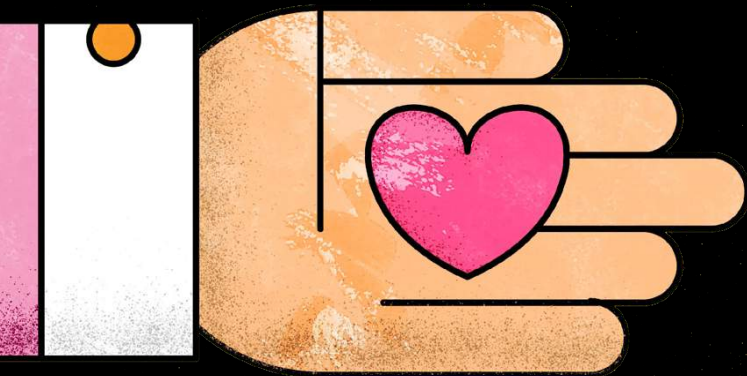
The Rise app shows how a player is progressing against such goals as “sleep time,” “recovery,” and “sleep debt,” among others.





The Rise welcome kit for players complete with UV glasses, sleep mask, and bed sensor. The redesigned service helped Rise Science scale the high-touch experience of sleep coaching, to professional sports teams like the Chicago Bulls and Miami Dolphins.





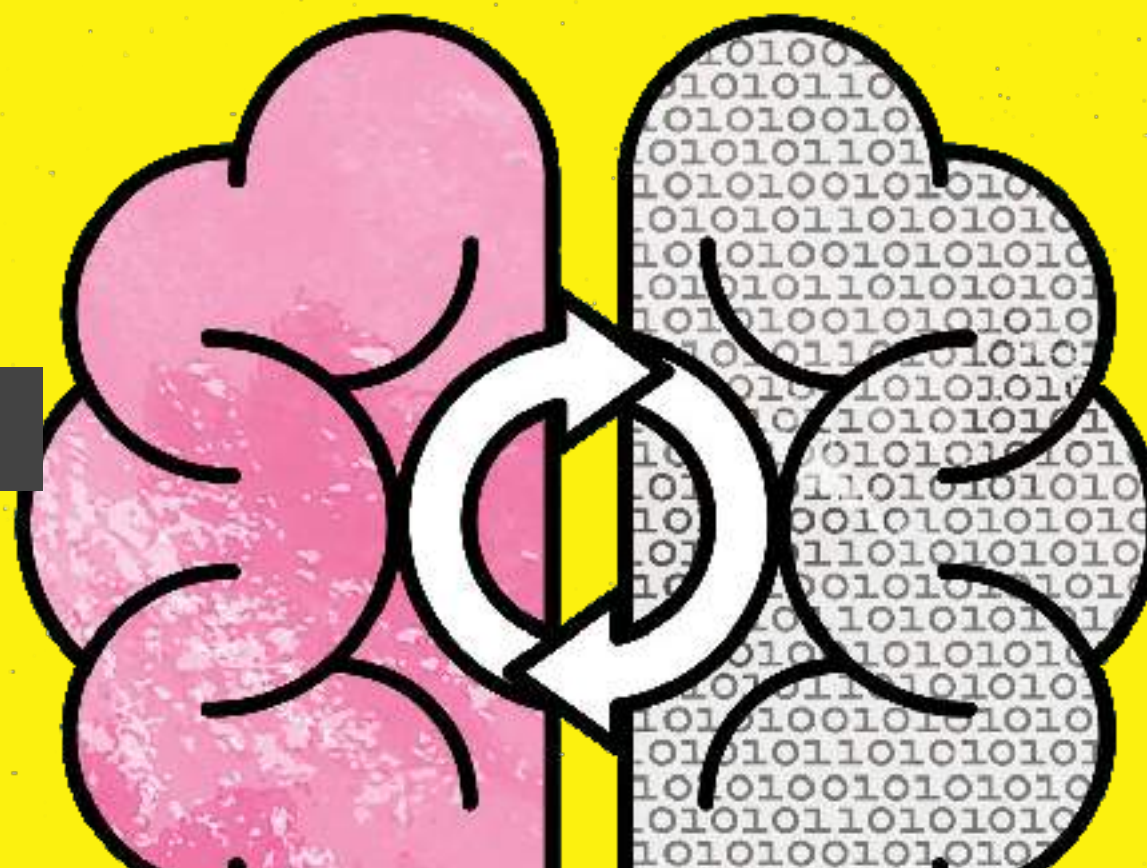
So you see, augmented intelligence combines the best of both worlds: the irreplaceable and nuanced insights borne from human intuition, along with the power of technology.



# IT'S OUR DUTY TO BRING HUMANITY TO TECHNOLOGY.

And so, as designers, It's our duty to bring humanity to technology.

IDEO



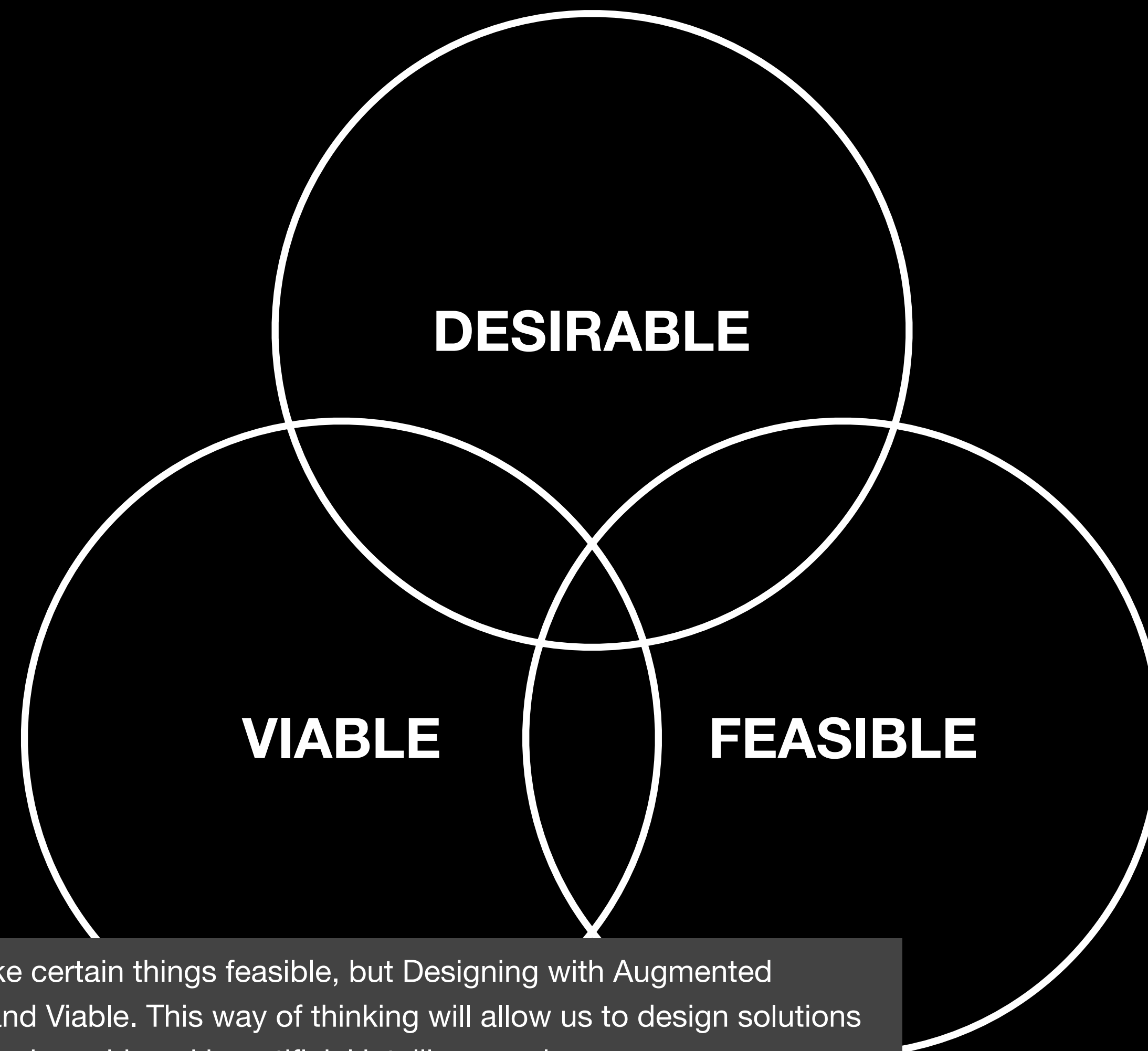




...to design it to be relevant, empathetic, and soulful, to the human.







Surely, Artificial Intelligence technology will make certain things feasible, but Designing with Augmented Intelligence in mind will make them Desirable, and Viable. This way of thinking will allow us to design solutions that are far more powerful than anything that can be achieved by artificial intelligence alone.



INTERACTION DESIGN

*our era*

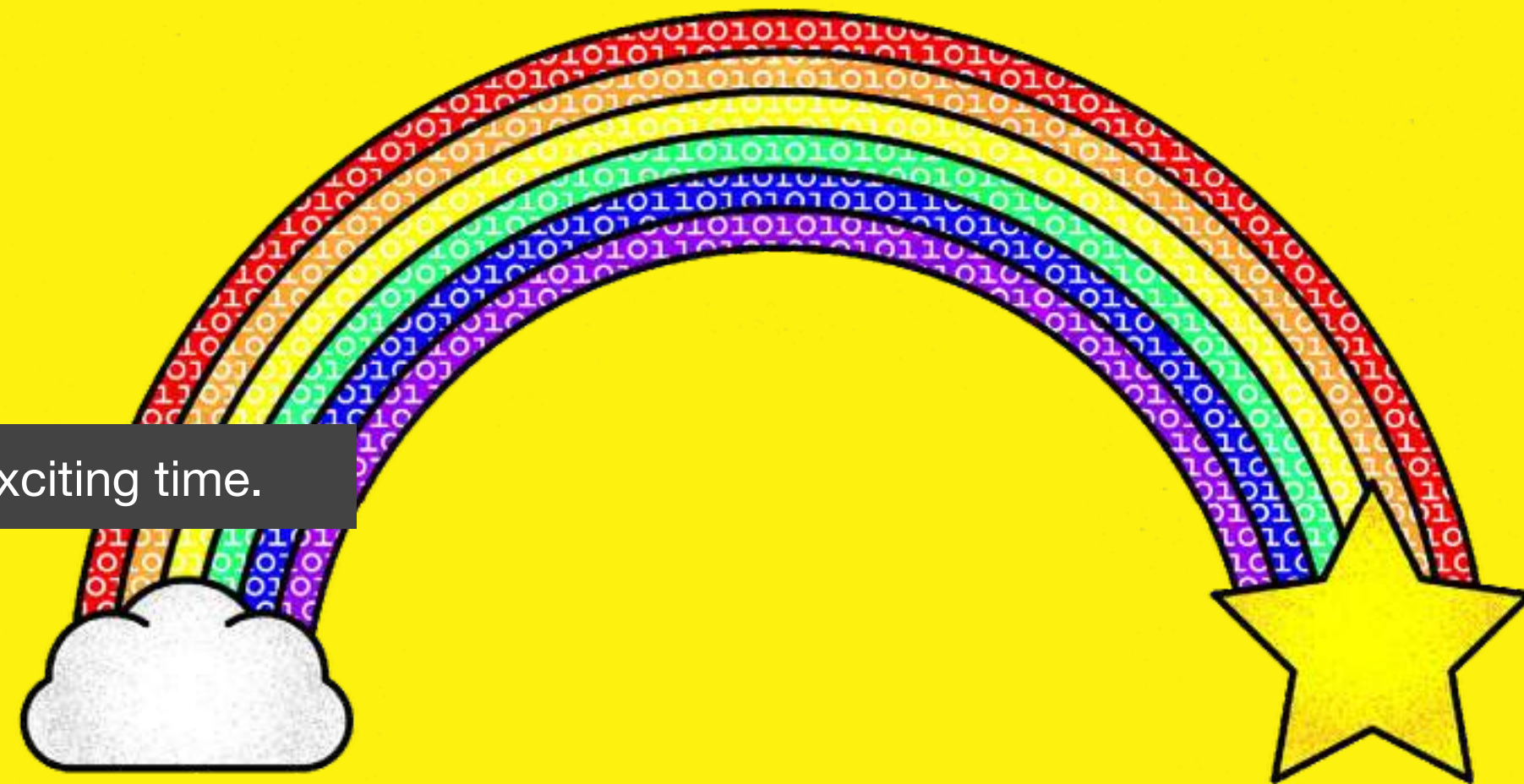
AI

Now, let's look at the era in which we as designers are working in.

# THERE HAS NEVER BEEN A MORE EXCITING TIME FOR DESIGNERS.

Our era. For designers, there has never been a more exciting time.

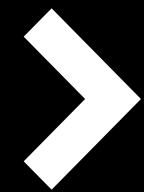
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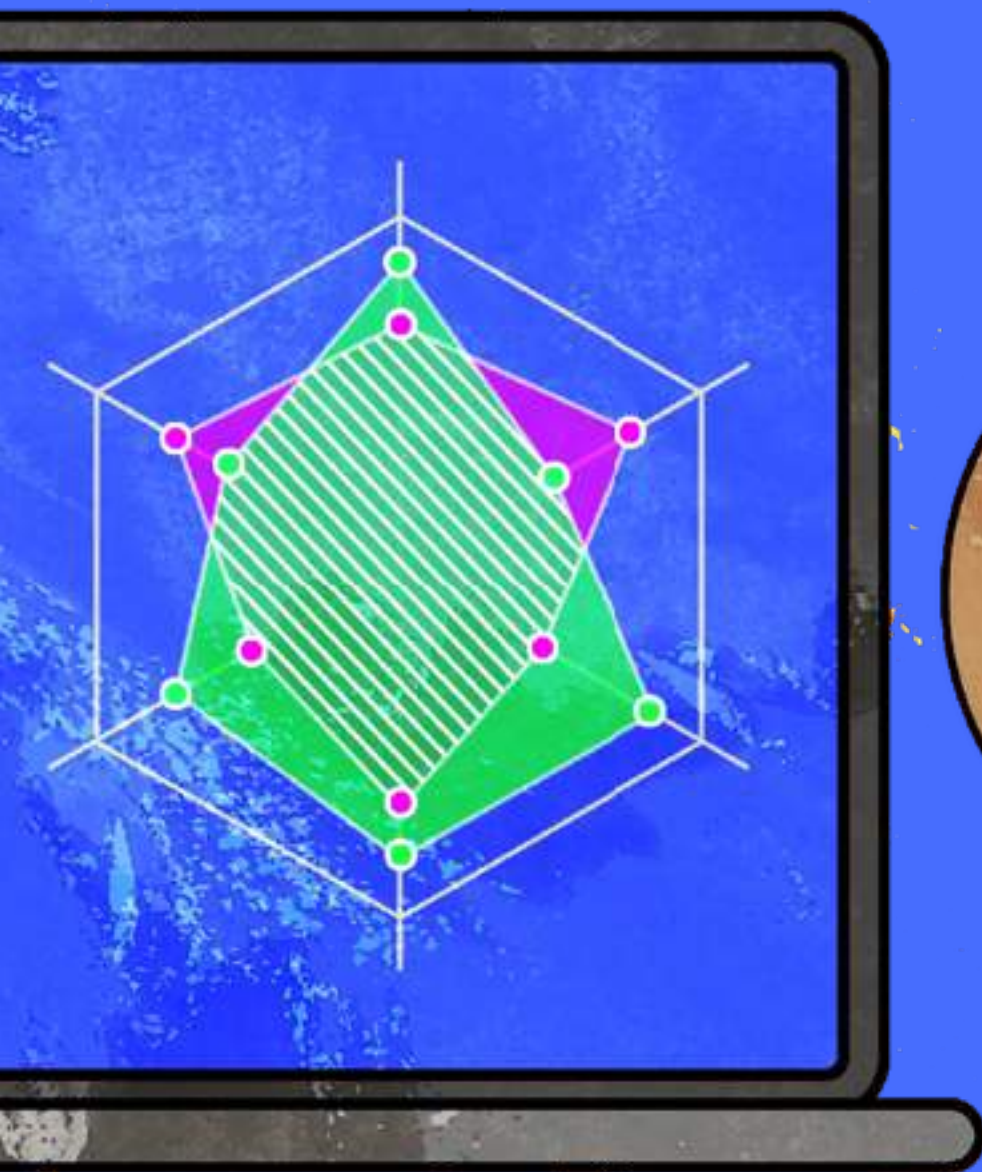
**SILOED  
CREATION**



*to*

**COLLABORATIVE  
DESIGN**

The role of design has shifted from silo-ed creation to collaborative design. If you look at it in a timeline you'll see how in the past, design played an important role in well defined realms, surrounded with well defined design disciplines. Industrial and Graphic Design ruled the industry. And division of labor had its advantages: Planning, design, production, and distribution had set very well defined boundaries and parameters. However in today's world, good design thrives on collaboration to meet human needs.



## INCORPORATING DATA CAPTURE IN DESIGN RESEARCH

This doesn't mean the discipline of design has been challenged, rather it's been enhanced by new and different ways of work and uses of modern technology to augment our design capabilities to continue to solve problems. For example: incorporating data capture in design research, so we can better understand human needs by studying behavioral data or to identify irrational behaviors at scale...



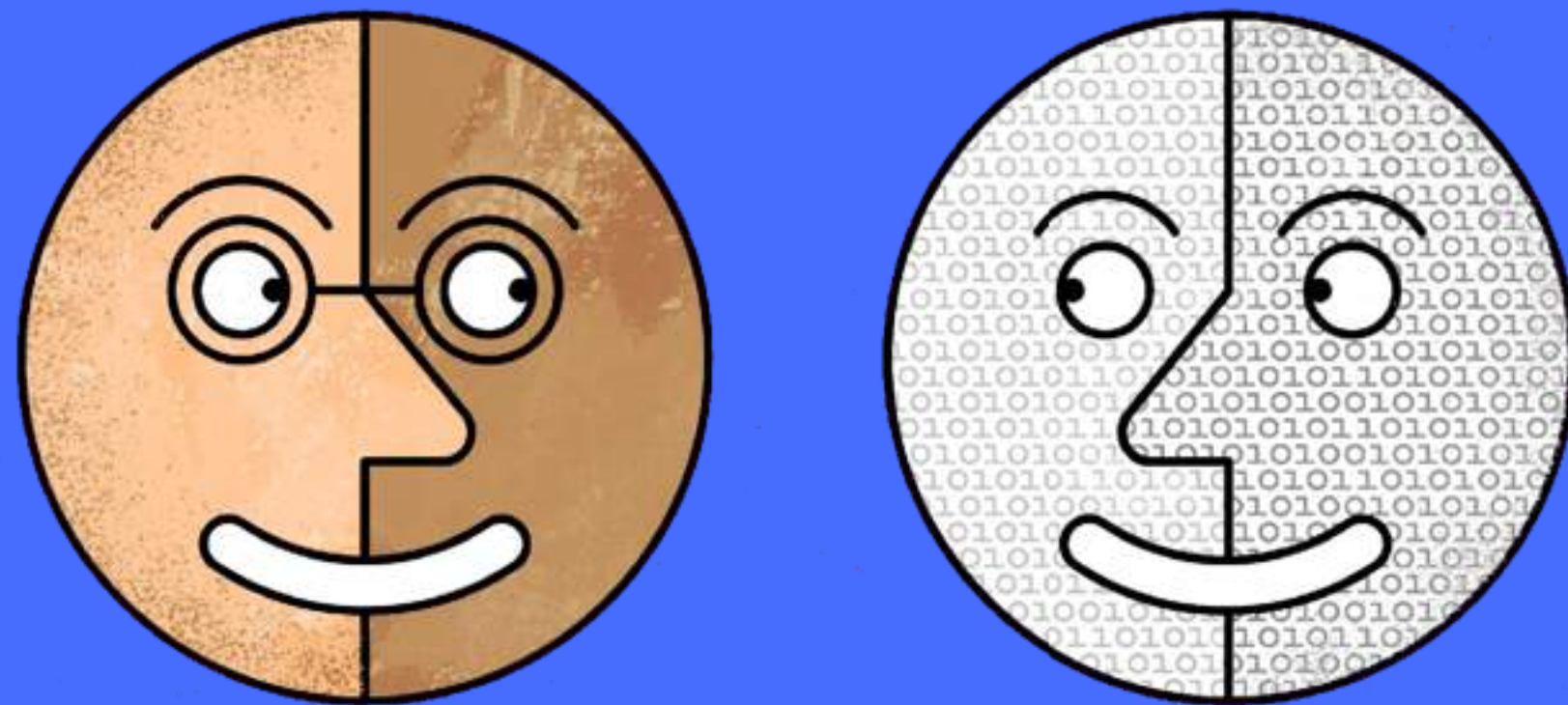
# EMBEDDING DATA SCIENCE INTO INTERACTION DESIGN

...or embedding data science into interaction design, to prototype digital products that sense, act, and learn from consumers.

**IDEO**







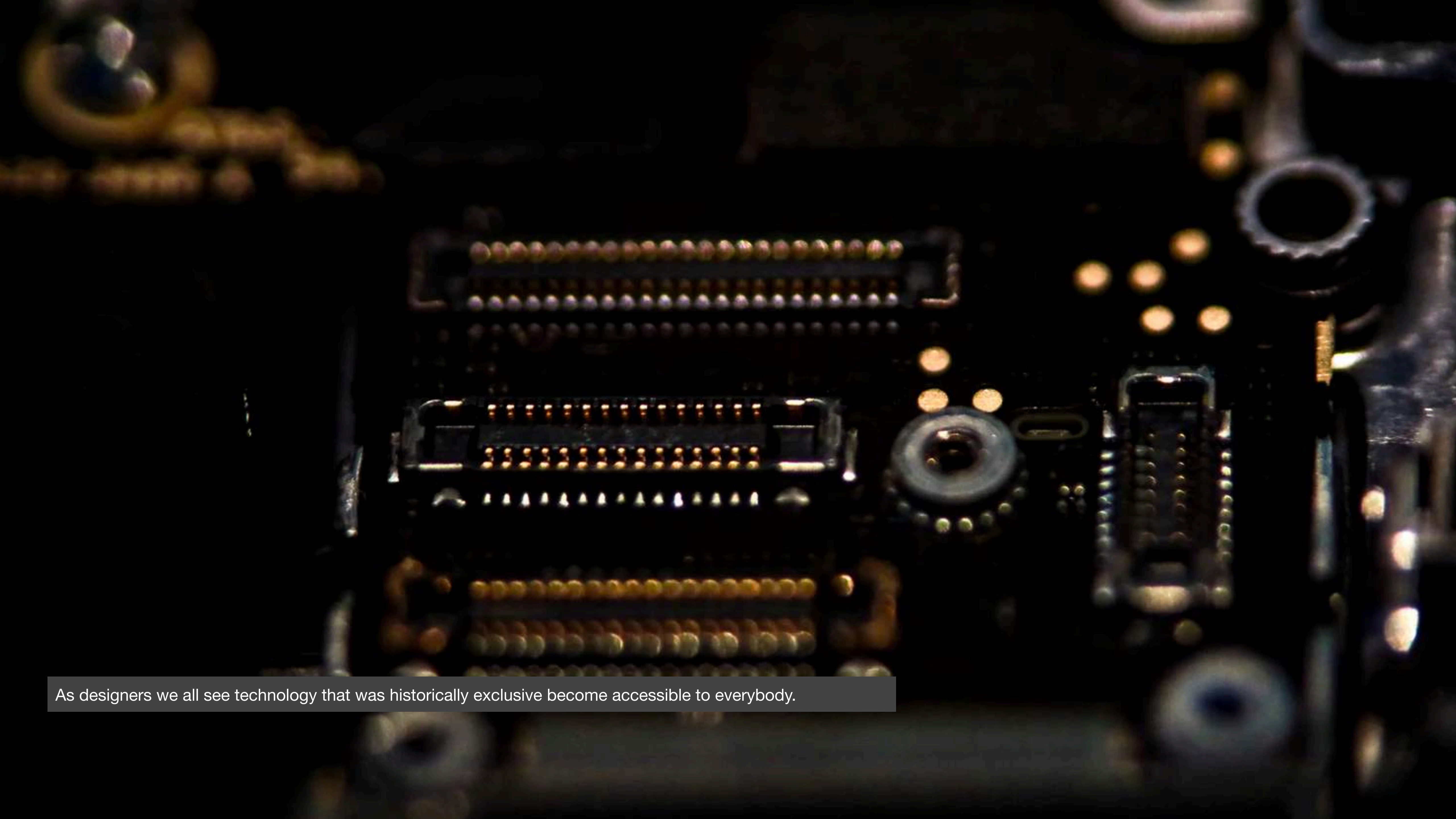
Essentially, technology has enabled designers to become more collaborative and to cover more ground, at scale and in new and exciting ways.





This is reflective in the the tools that most of us here, use to communicate, to design, to prototype, to test, and to learn from each other.





As designers we all see technology that was historically exclusive become accessible to everybody.

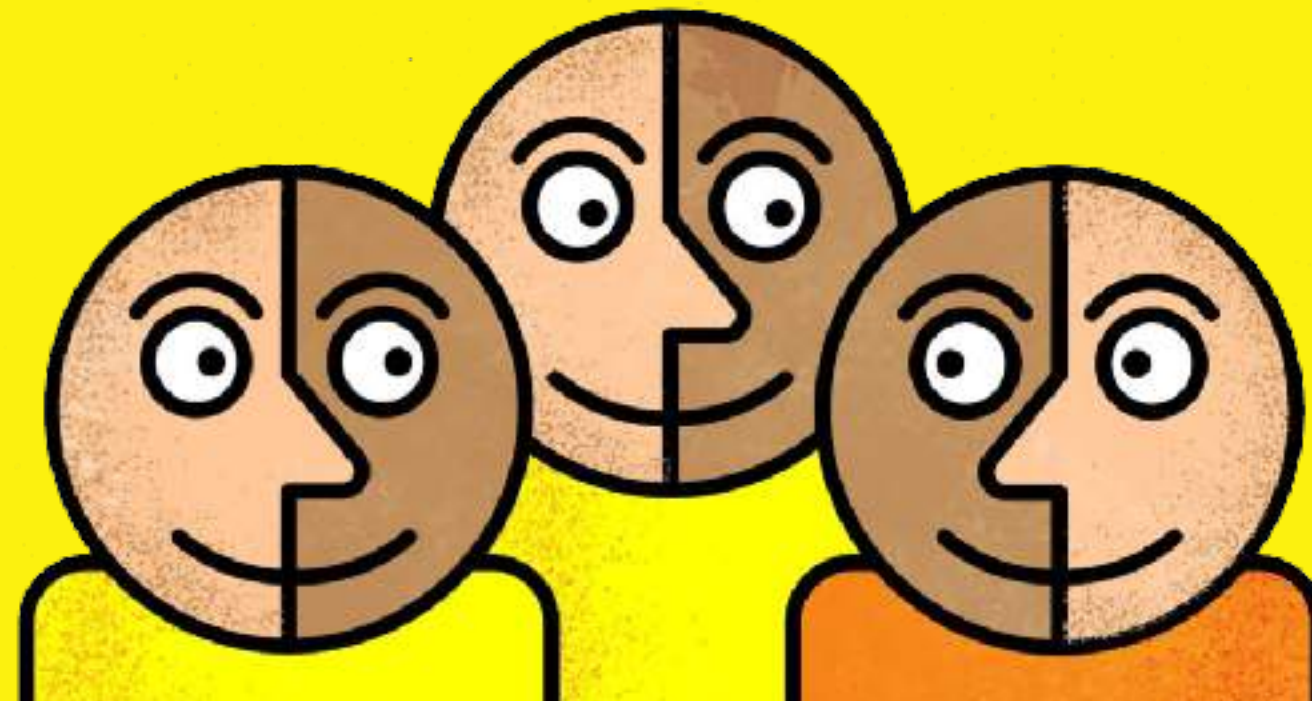


A close-up, low-angle shot of a person's face, tilted back and looking upwards. They are wearing a white and black VR headset and large black over-ear headphones. The person has dark hair and a serene, almost meditative expression. The lighting is warm and monochromatic, with a strong orange-red hue that bathes the entire scene. The background is a soft, out-of-focus gradient of the same color. The overall mood is one of immersion and tranquility.

We experience the rise of powerful technology that aids us to continue creating things. And more importantly...



**WE GET TO DESIGN TO  
AUGMENT THE CAPABILITIES  
OF HUMANS.**





# INTERACTION DESIGN



*our era*

**AI**

In such an era, what is the role of Interaction Design. What is the role of Interaction Designers?

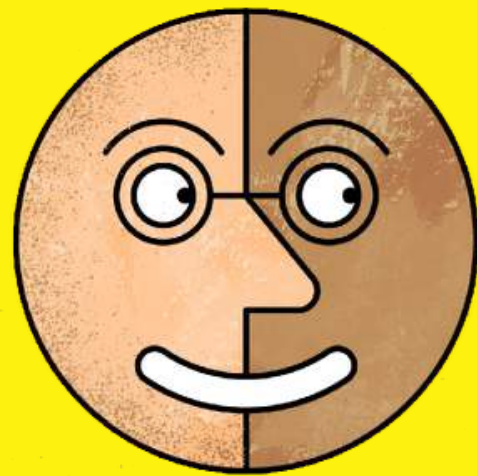




Interaction design is... a line.

IDEO

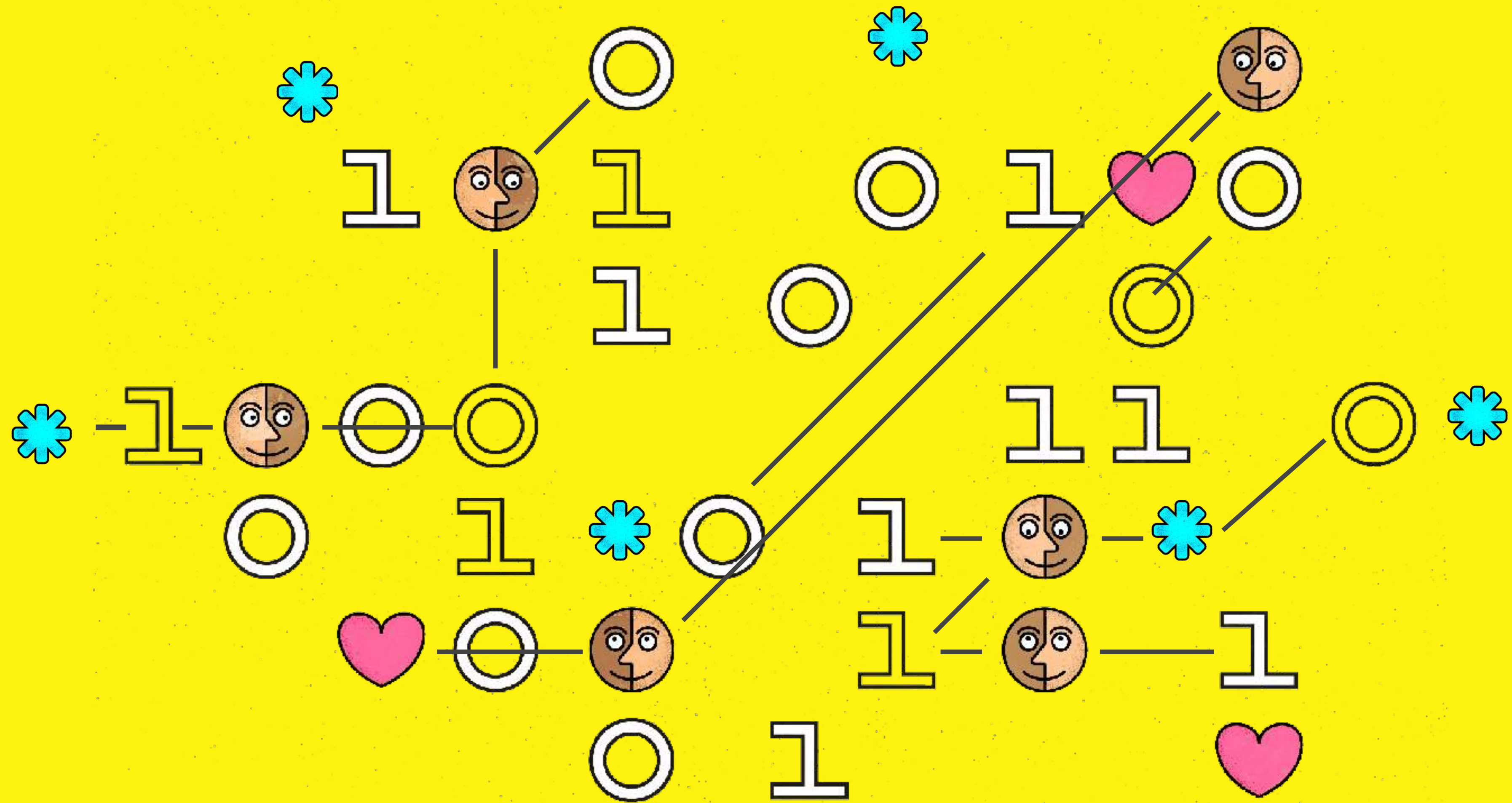




It's a connection between things.

**IDEO**





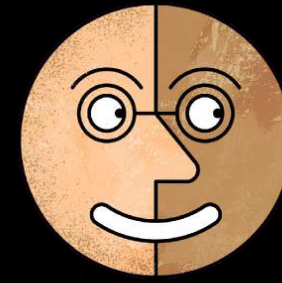
It's a relationship that exists between people and everything else.

INTERACTION DESIGN LIVES  
IN PEOPLE'S RELATIONSHIP  
WITH THINGS.

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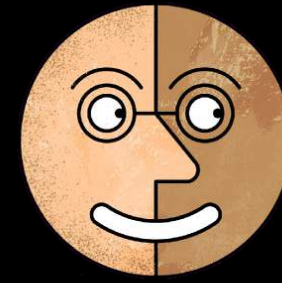
*–Bill Moggridge, father of  
interaction design, and co-founder  
of* **IDEO**





## YOUR WORKPLACE

Consider, for example – the relationship between you and your workplace.

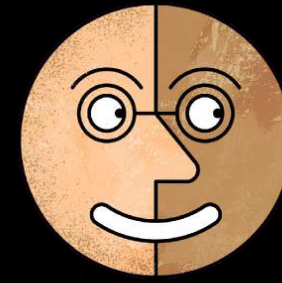


**TRANSPORTATION**

**YOUR WORKPLACE**

Zoom out a bit and consider the relationship between you and your means of transportation to your workplace.



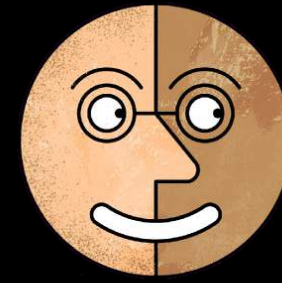


**BUILDING GATE**

**TRANSPORTATION**

**YOUR WORKPLACE**

Between you and the gate in your building.



**APARTMENT DOOR**

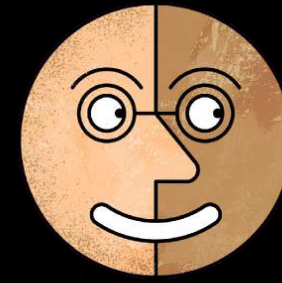
**BUILDING GATE**

**TRANSPORTATION**

**YOUR WORKPLACE**

Between you and the door in your apartment.





**BED**

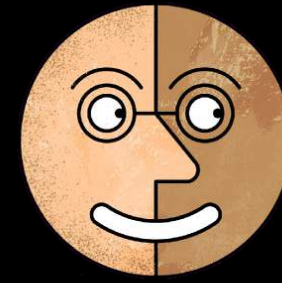
**APARTMENT DOOR**

**BUILDING GATE**

**TRANSPORTATION**

**YOUR WORKPLACE**

Between you and your pillow.



**BED**

**APARTMENT DOOR**

**BUILDING GATE**

**TRANSPORTATION**

**YOUR WORKPLACE**

These relationships are opportunities for design.



**BED**

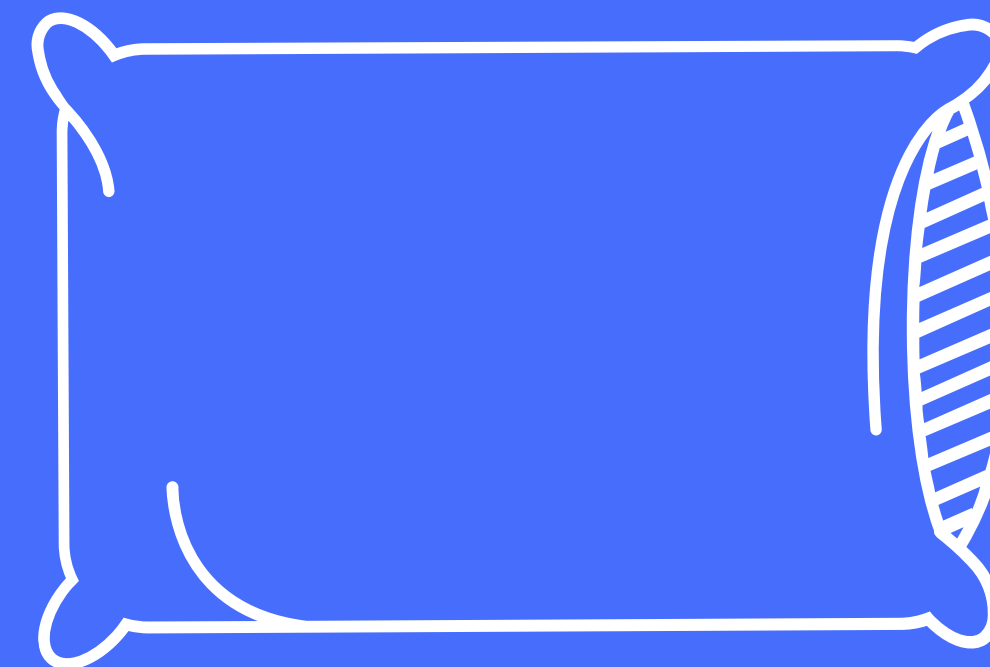
APARTMENT DOOR

BUILDING GATE

TRANSPORTATION

YOUR WORKPLACE

From designing a smart pillow that helps people sleep better by regulating its firmness, or a bed cover that monitors body signals



**IDEO**

BED

APARTMENT DOOR

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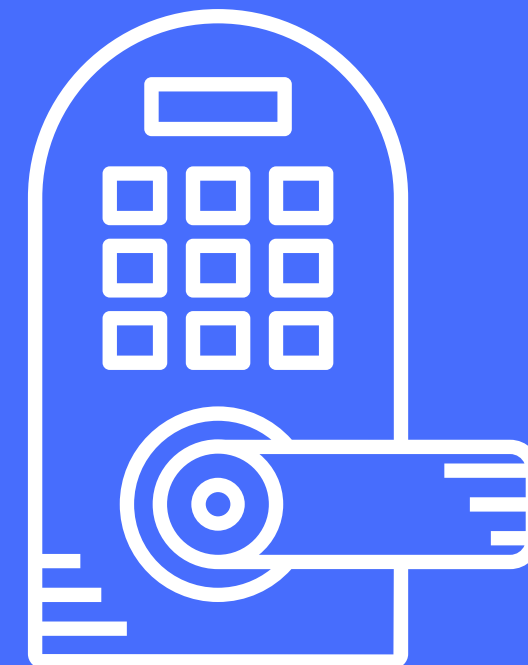
BUILDING GATE

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TRANSPORTATION

YOUR WORKPLACE

to designing a door that can be locked or unlocked remotely



IDEO



BED

APARTMENT DOOR

BUILDING GATE

**TRANSPORTATION**

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YOUR WORKPLACE

to designing intelligent mobility systems

**IDEO**



BED

APARTMENT DOOR

BUILDING GATE

TRANSPORTATION

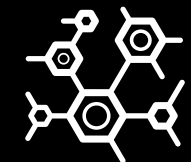
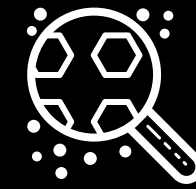
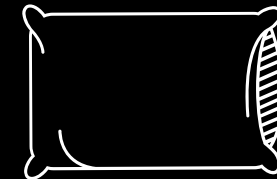
**YOUR WORKPLACE**

to designing the tools that empower you in your workplace.

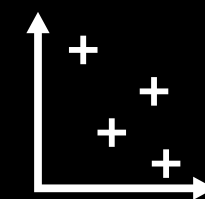
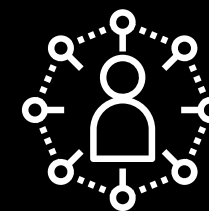
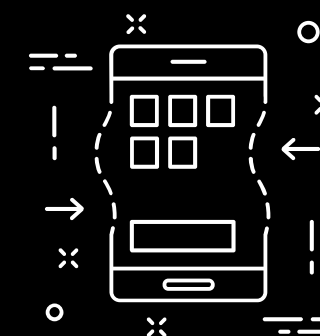
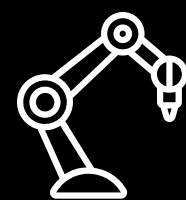
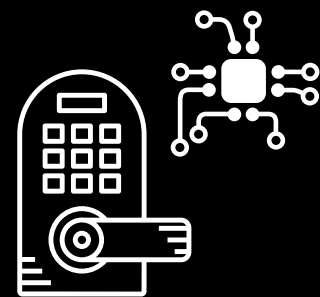
**IDEO**







# HOW WILL WE CONTINUE DESIGNING FOR A FUTURE OF AUGMENTED INTELLIGENCE?



**START WITH  
TECHNOLOGY**

**START WITH  
PEOPLE**

Would you start by thinking about the technology you could use, or would you be starting from the human need?

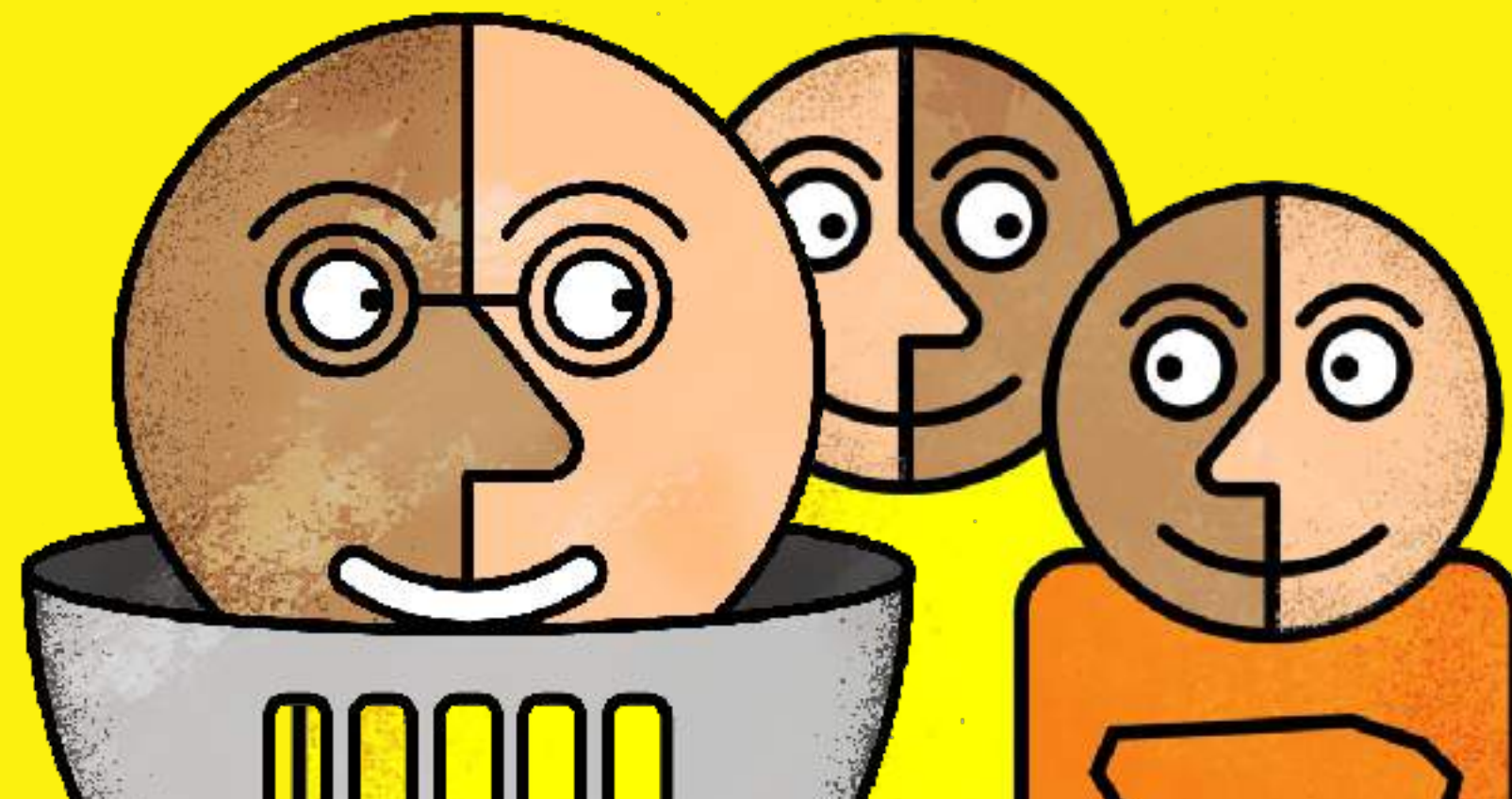


**TECHNOLOGY  
SETS THE  
RULES**

**TECHNOLOGY AIDS  
THE PERSON**

Would you let technology set the rules or would you make technology aid or extend the person? And above it all...

# HOW MIGHT WE DESIGN TO AUGMENT HUMAN CAPABILITIES?







## AUGMENTED SENSES



## AUGMENTED PHYSIQUE



## AUGMENTED COGNITION

Consider some of these augmented human capabilities [AUGMENTED SENSES/PHYSIQUE/COGNITION] –  
How might we design on the relationship between people and these augmented capabilities?



## AUGMENTED SENSES

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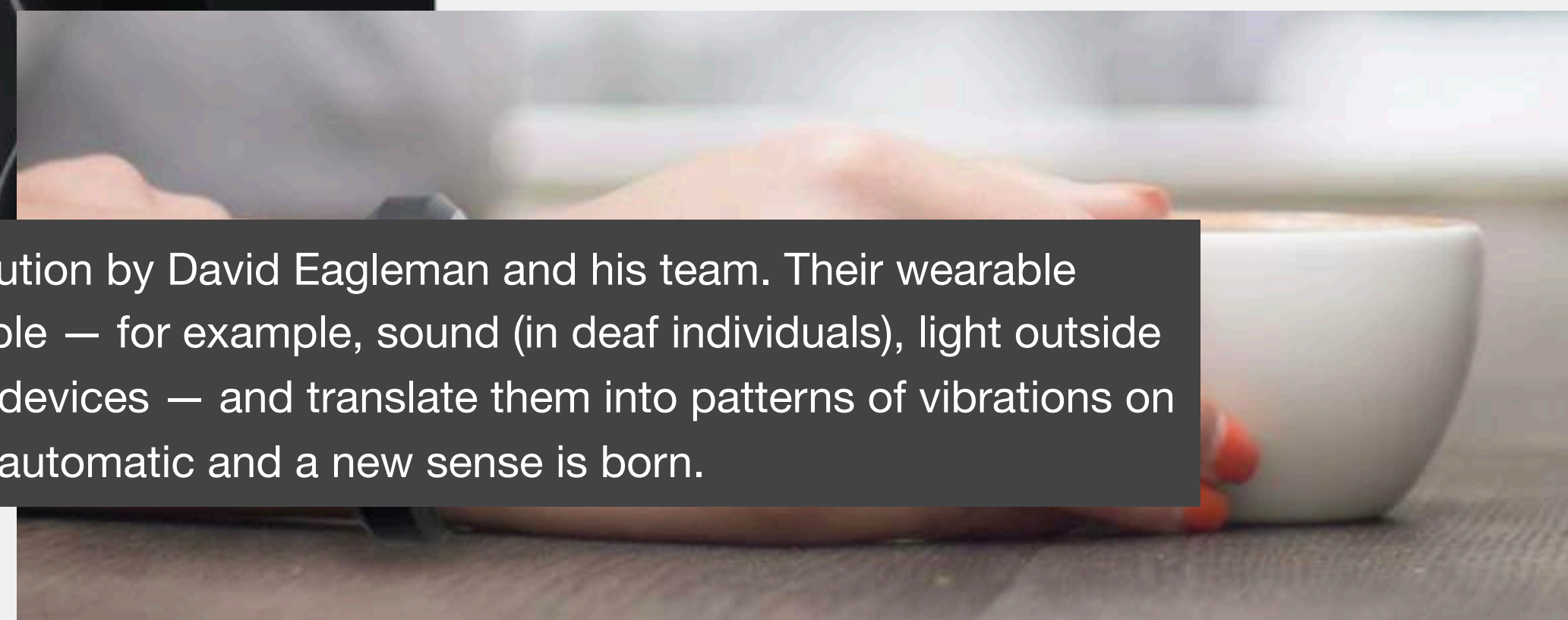
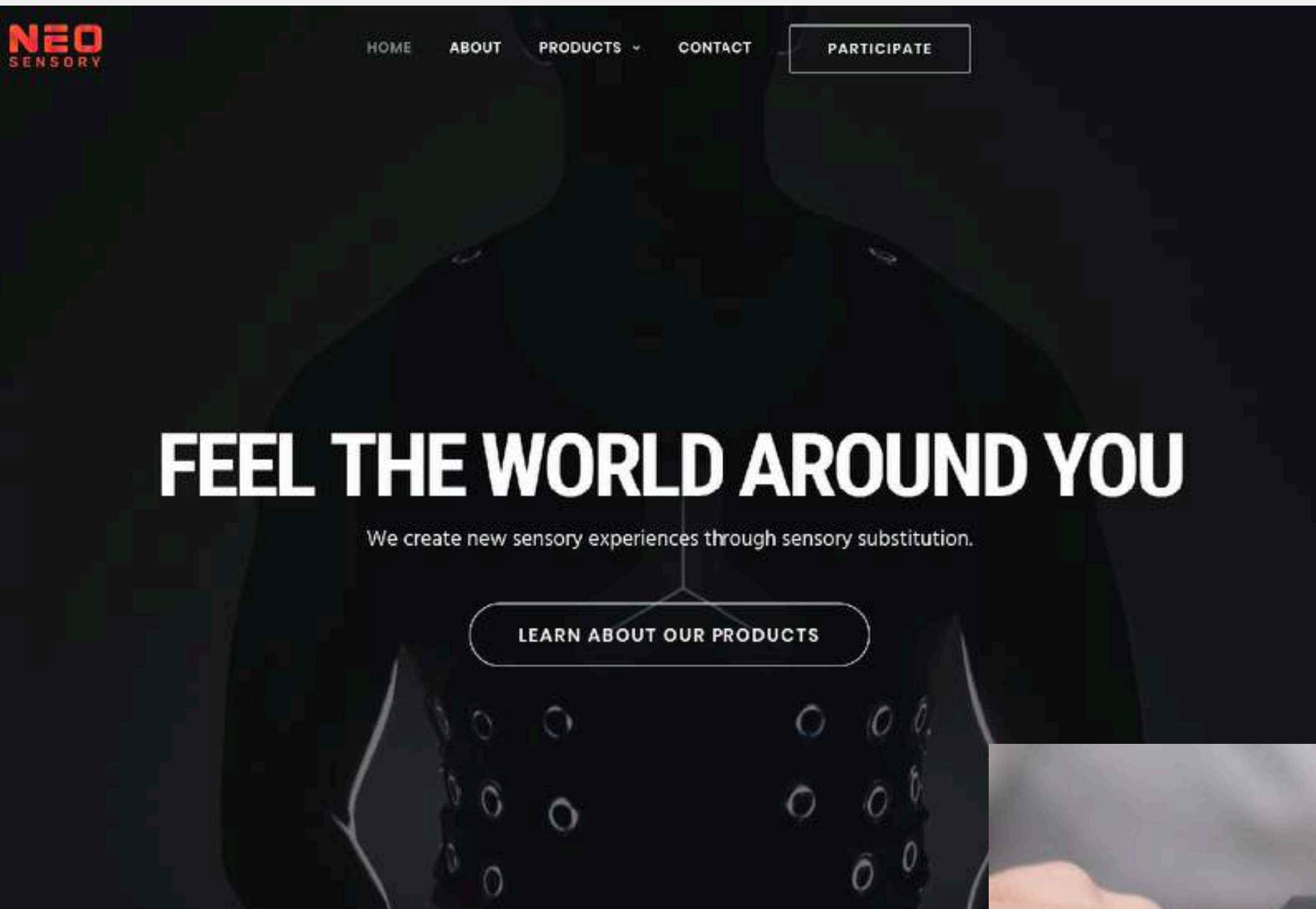
## AUGMENTED PHYSIQUE



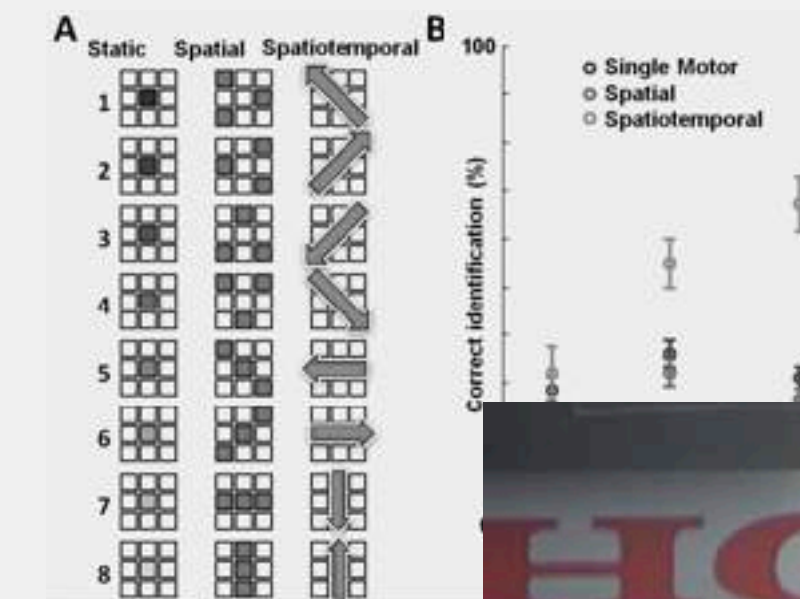
## AUGMENTED COGNITION

How might we design visual, hearing, haptics, or orientation tools to augment our sensorial capabilities? Here are a couple of examples of what's out there in the world.





Neosensory is a work in progress on sensory substitution by David Eagleman and his team. Their wearable devices take in information that is not easily accessible — for example, sound (in deaf individuals), light outside the visible spectrum, or information from connected devices — and translate them into patterns of vibrations on the body. With practice, these associations become automatic and a new sense is born.







Another example is Aum Cardiovascular – a startup in the US that developed a digital stethoscope that pairs remotely with an artificial-intelligence system to help clinicians analyze acoustic and electrical data for signs of heart problems.





## AUGMENTED SENSES



## AUGMENTED PHYSIQUE

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## AUGMENTED COGNITION

How might we design interactive products for strength, speed, accuracy, fitness, and endurance to augment our physical capabilities?



This example comes from Ekso Bionics, who is pioneering the field of robotic exoskeletons, or wearable robots, to augment human strength, endurance and mobility. These exoskeletons have a variety of applications in the medical, military, industrial, and consumer markets. It even enables individuals with any amount of extremity weakness, including those who are paralyzed, to stand up and walk.









## AUGMENTED SENSES



## AUGMENTED PHYSIQUE

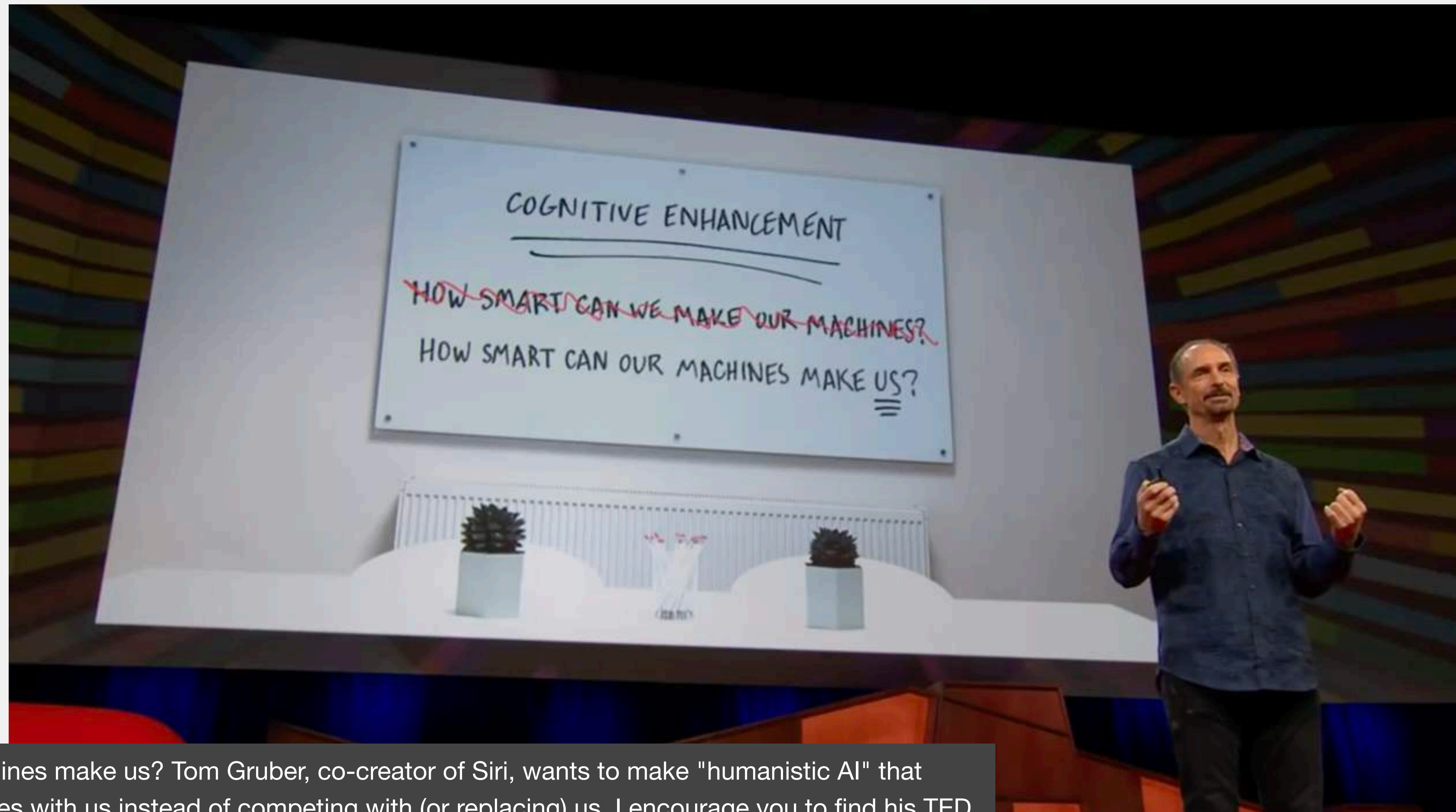


## AUGMENTED COGNITION

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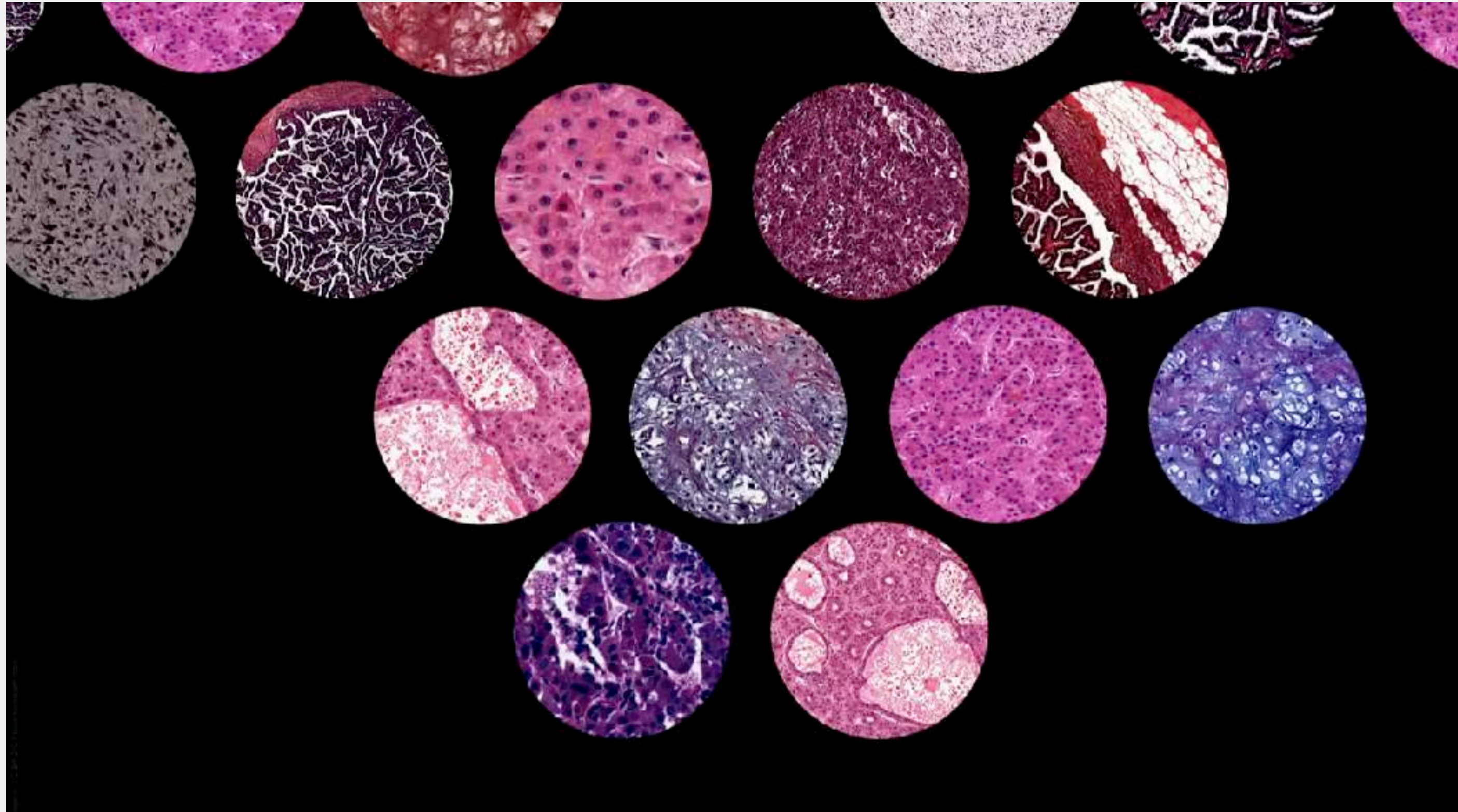
Lastly, how might we design better ways to access knowledge, extend brain functions, and improve memory recall to augment our cognitive capabilities?



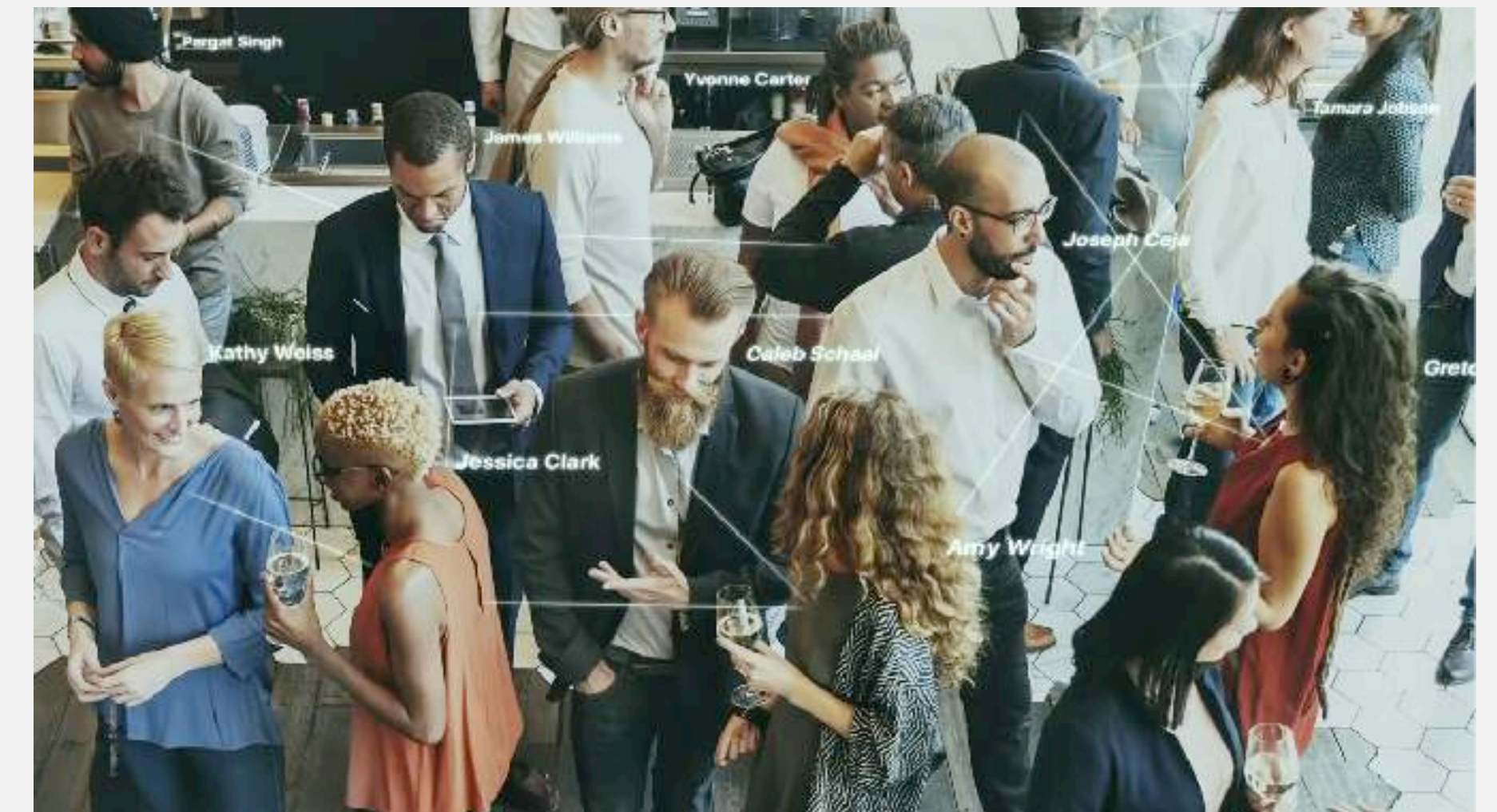


How smart can our machines make us? Tom Gruber, co-creator of Siri, wants to make "humanistic AI" that augments and collaborates with us instead of competing with (or replacing) us. I encourage you to find his TED talk online.





In his TED talk he shares his vision for a future where AI helps us achieve superhuman performance in perception, creativity and cognitive function -- from turbocharging our design skills to helping us remember everything we've ever read and the name of everyone we've ever met.





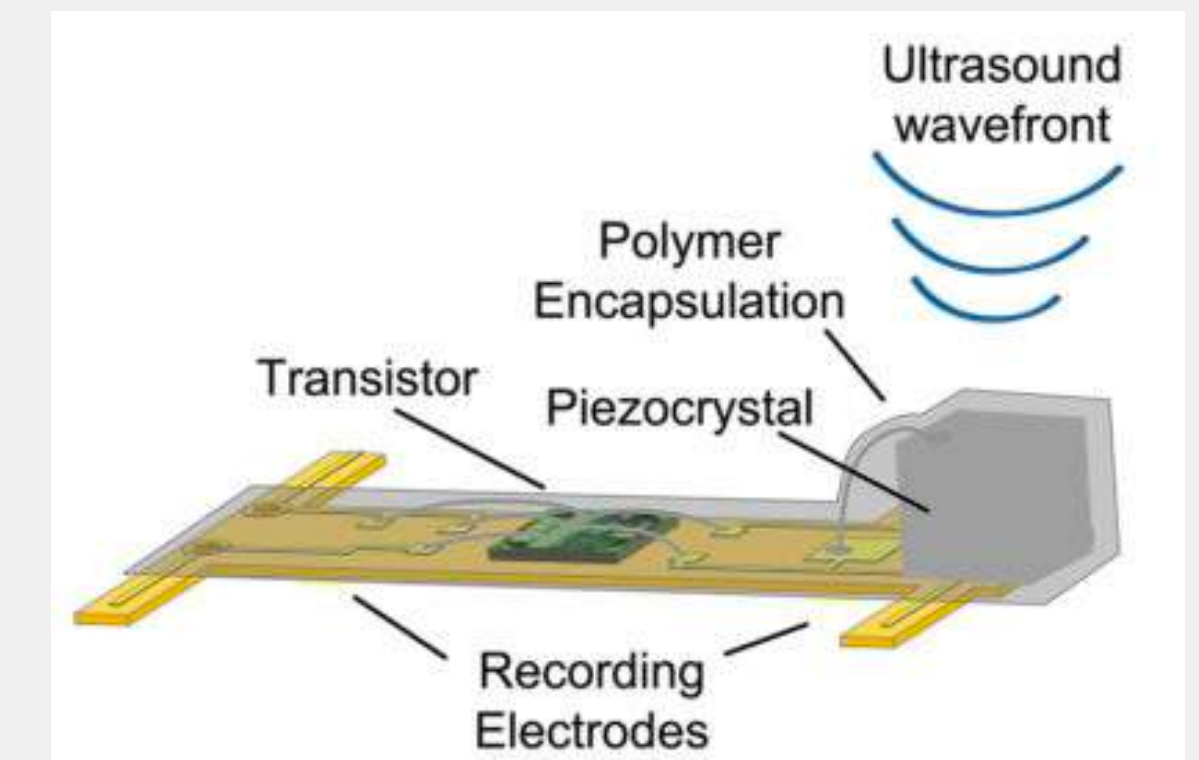
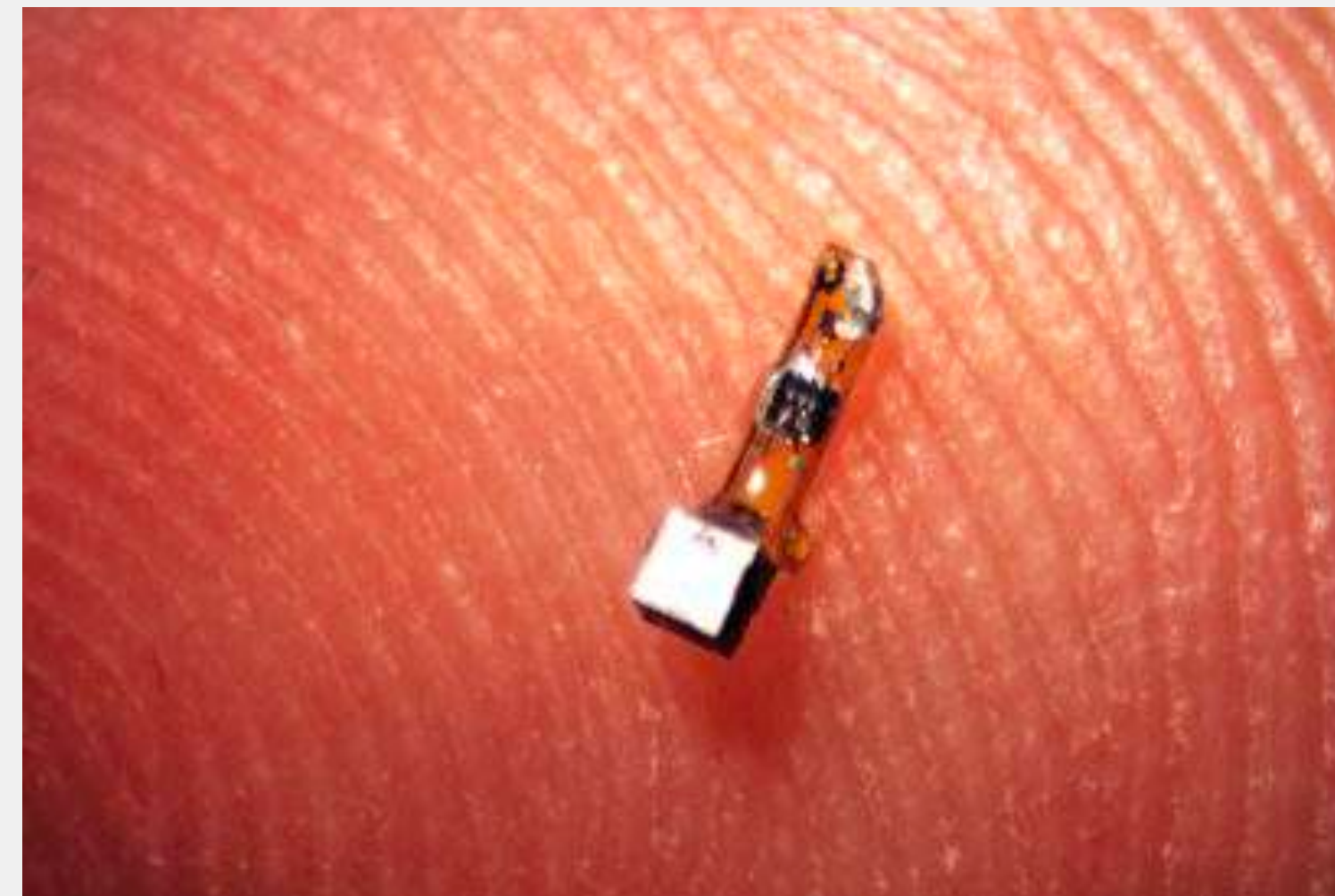
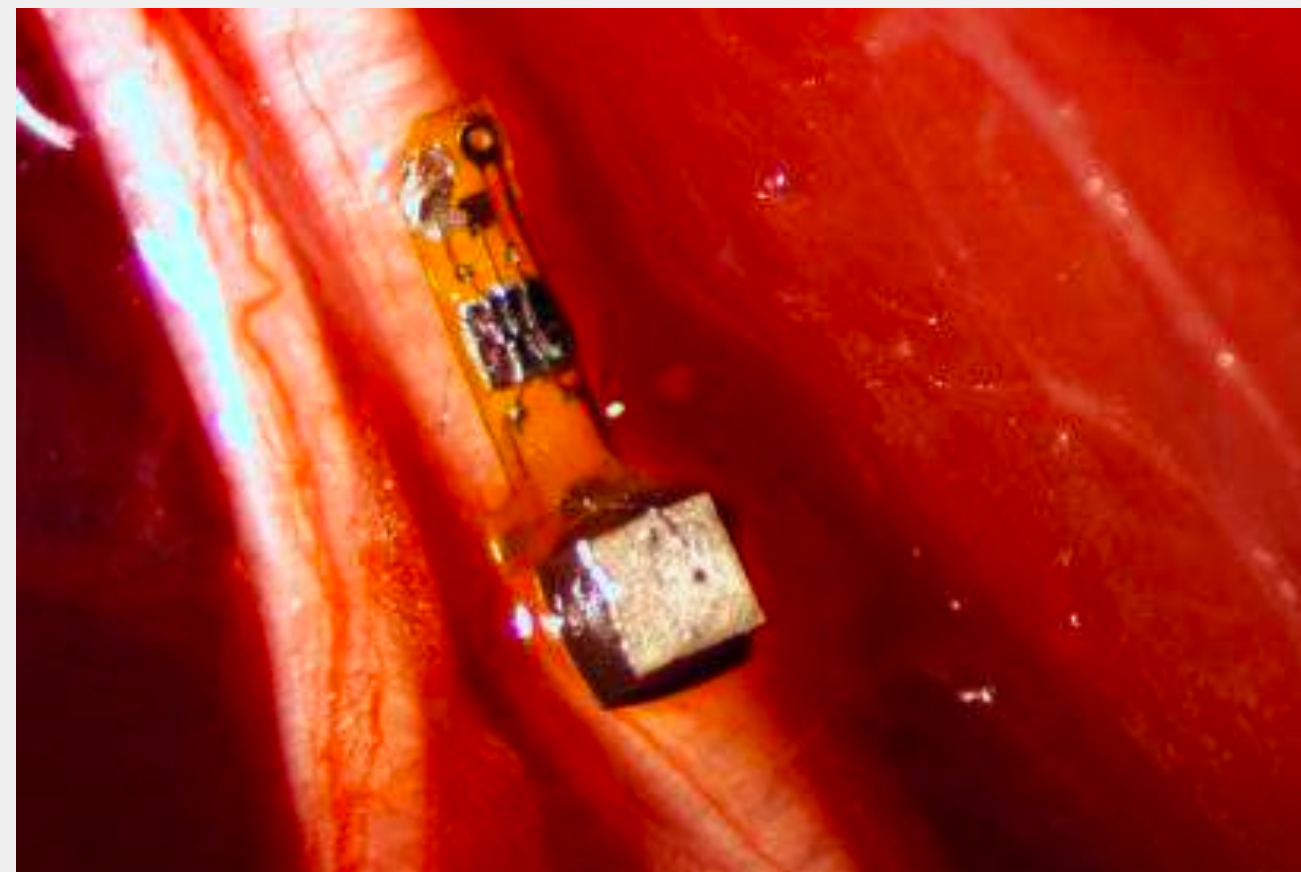
# Virtual Reality as an Embodied Tool to Enhance Episodic Memory in Elderly



Virtual Reality as an Embodied Tool to Enhance Episodic Memory in Elderly – Basically, the core thing on memory is about hippocampus, which is in charge of both memory and spatial cognition – And VR is a very spatial experience. That's why we are good at remembering spaces. That's why VR and Memory can be connected.



# Neural Dust



Neural Dust – University of Berkeley engineers have built the first dust-sized, wireless sensors that can be implanted in the body and monitor internal nerves, muscles or organs in real time. Because these batteryless sensors could also be used to stimulate nerves and muscles, the technology also opens the door to “electroceuticals” to treat disorders such as epilepsy or to stimulate the immune system or tamp down inflammation.



With all of this – Imagine the complexities. Imagine the possibilities. Imagine the opportunities! Imagine the future.

**OUR FUTURE SITS IN DESIGNER'S  
CAPACITY TO IMAGINE.**





# Hyperhuman

## A celebration of machine augmented intelligence

...of the near future will accelerate us to

And before I leave, I wanna show you something we put together recently. At IDEO we created a design exhibition called Hyperhuman. It is a speculative design exhibition celebrating the immense potential benefits that intelligent machines can bring to our lives, our work, and our society. IDEO looks at data science and machine learning from a protopian perspective.

IDEO

guiding us so we can  
and expanding our horizons so we can do  
what was once impossible.  
versions of ourselves.

A MENTAL FRAME

### 5 Levels of Augmentation

The Pyramid of Augmentation frames our thinking for the augmented age, where humans benefit from tight collaborations with machines. As we design for each type of device into our future experiences, we increase synergy and trust between human and machine.

Assimilation

It integrates with human capabilities without being an extension or replacement for human capabilities, instead it takes advantage of machine

Amplification

It broadens our capabilities and understanding by exposing us to new ideas and introducing unexpected solutions to our problems. It enables mastery

Adaptation

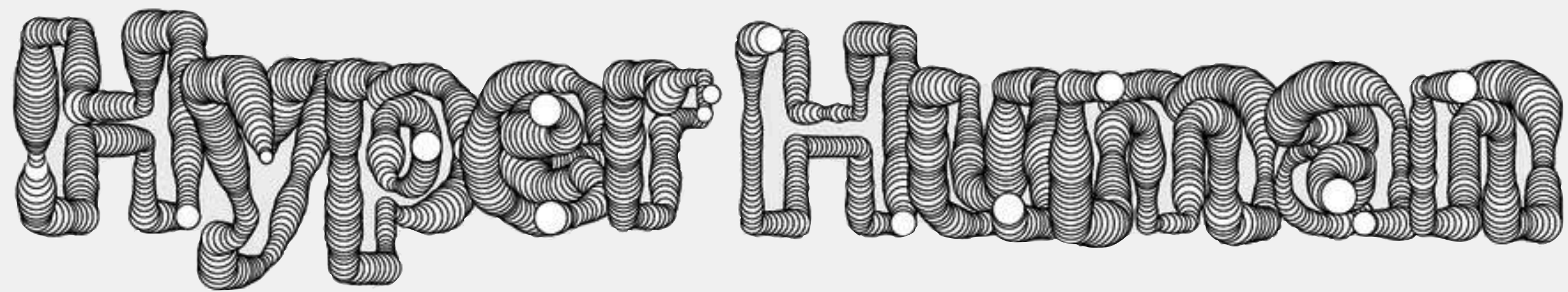
It learns about our behaviors and the environment. It continuously adapts or anticipates our time, always having it in mind in any given context

Assistance

It helps us make faster and better choices with better information. It narrows down our options and guides us to the most effective and efficient way to achieve our goals







**HOW WE INTERACT**

**HOW WE CREATE**

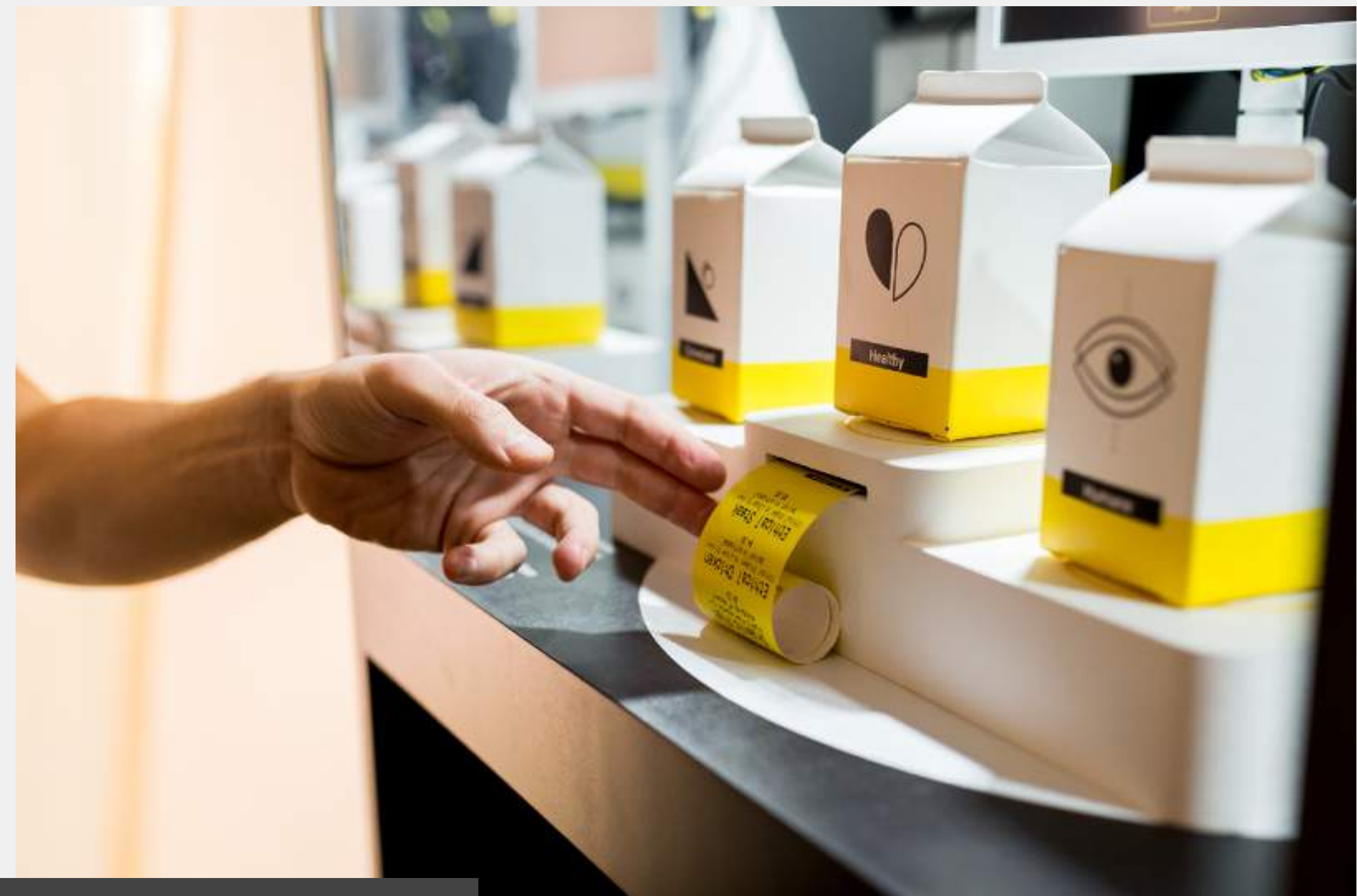
**HOW WE GET THINGS DONE**

**HOW WE LEARN**

We envisioned a speculative world where familiar machines get an enhanced role that enables us to be better at how we interact, how we create, how we get things done, how we learn, and the surrounding systems that support our new behaviors.

**IDEO**





17 designers and data scientists across different IDEO studios worked together on this project. We then built data-driven interactive prototypes and set them up as prompts to start researching what the augmented future might actually feel like. From those prototypes, we iterated into the four machines people saw and interacted with at the exhibition.



# The Belief Checkout

Like this machine: The Belief Checkout. What if tomorrow's supermarkets considered your values and ethics when automatically buying products for you? We outsource more and more tasks to AI. But how do we know that the decisions AI makes on our behalf are aligned with our beliefs and values? How do we impart them to the machine? The Belief Checkout's shelves are full of products that represent values. Pick the ones that reflect you to help steer the supermarket's algorithm. Say you value sustainability. While eating red meat may not sound like a sustainable choice, eating an overstocked steak might be. The supermarket can help you make choices that square with your values.





# The Belief Checkout

**WE LET GO OF CONTROL, BUT OUR BELIEFS STAY INTACT.**

# The Empathy Writer



The Empathy writer – Our globally connected lives mean we're frequently brought into contact with people from different cultures and backgrounds. Despite the opportunities these networks present, we often struggle to communicate, as we are not equally fluent in the other's language and culture. What if you could find just the right words to express your feelings? And nothing got lost in translation? The Empathy Writer helps you convey what you mean in a way that will be easily understood.



# The Empathy Writer

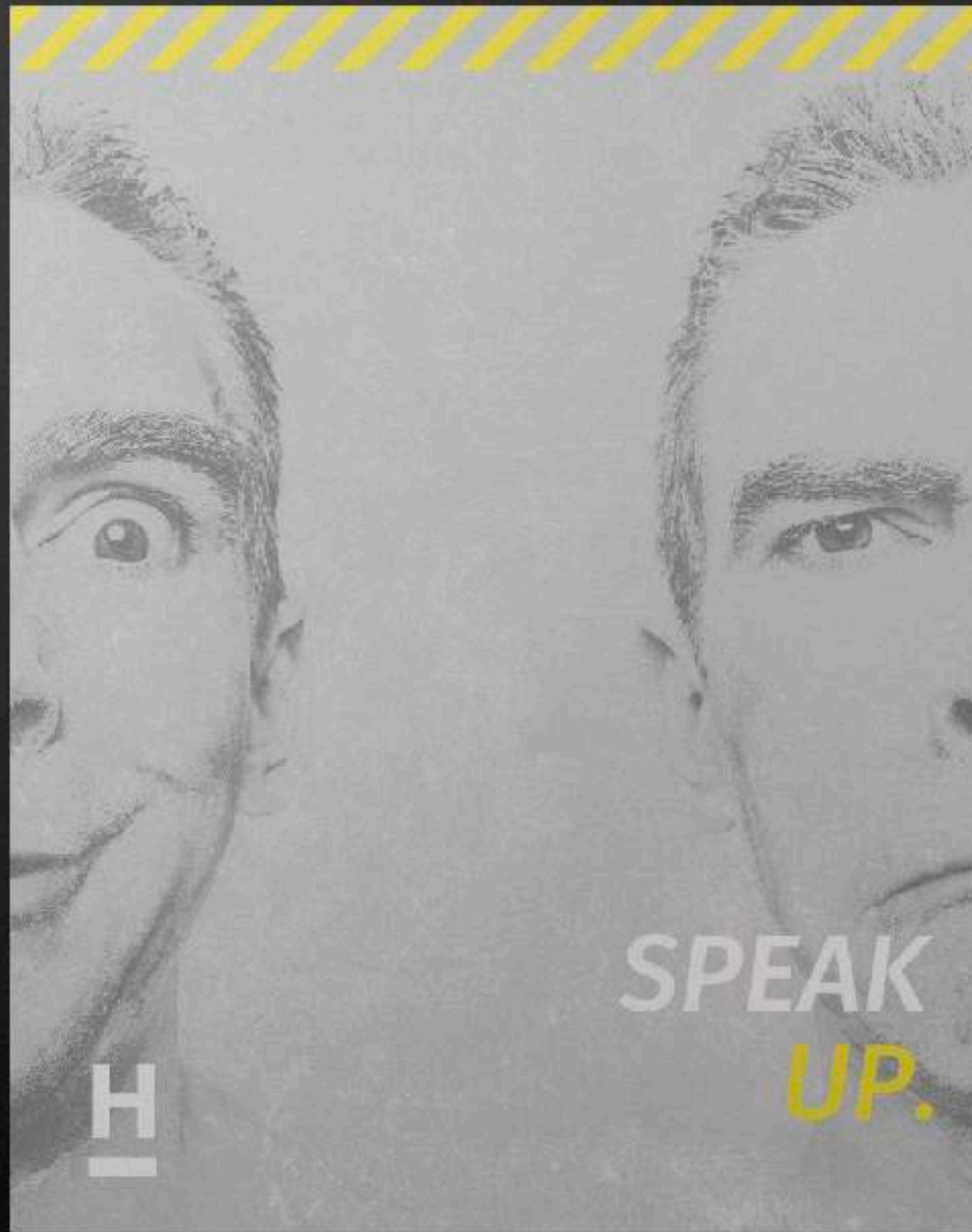
**EMPATHY IS AMPLIFIED.**

# The Creativity Mixer



The Creativity Mixer - What if you could describe your personality, and 'mix' a visual identity that expresses you? Even with a creative mindset, people often lack confidence and ability to shape and express their ideas at the highest level. What does your brand look like? Turn the dials of the Creativity Mixer to set your personality ("playful," "stubborn") and it calls up images, fonts, and colors for you to use when executing ideas.





When settled with your choices, hit print for your very own brand style guide. Creativity is latent, tools make it accessible.

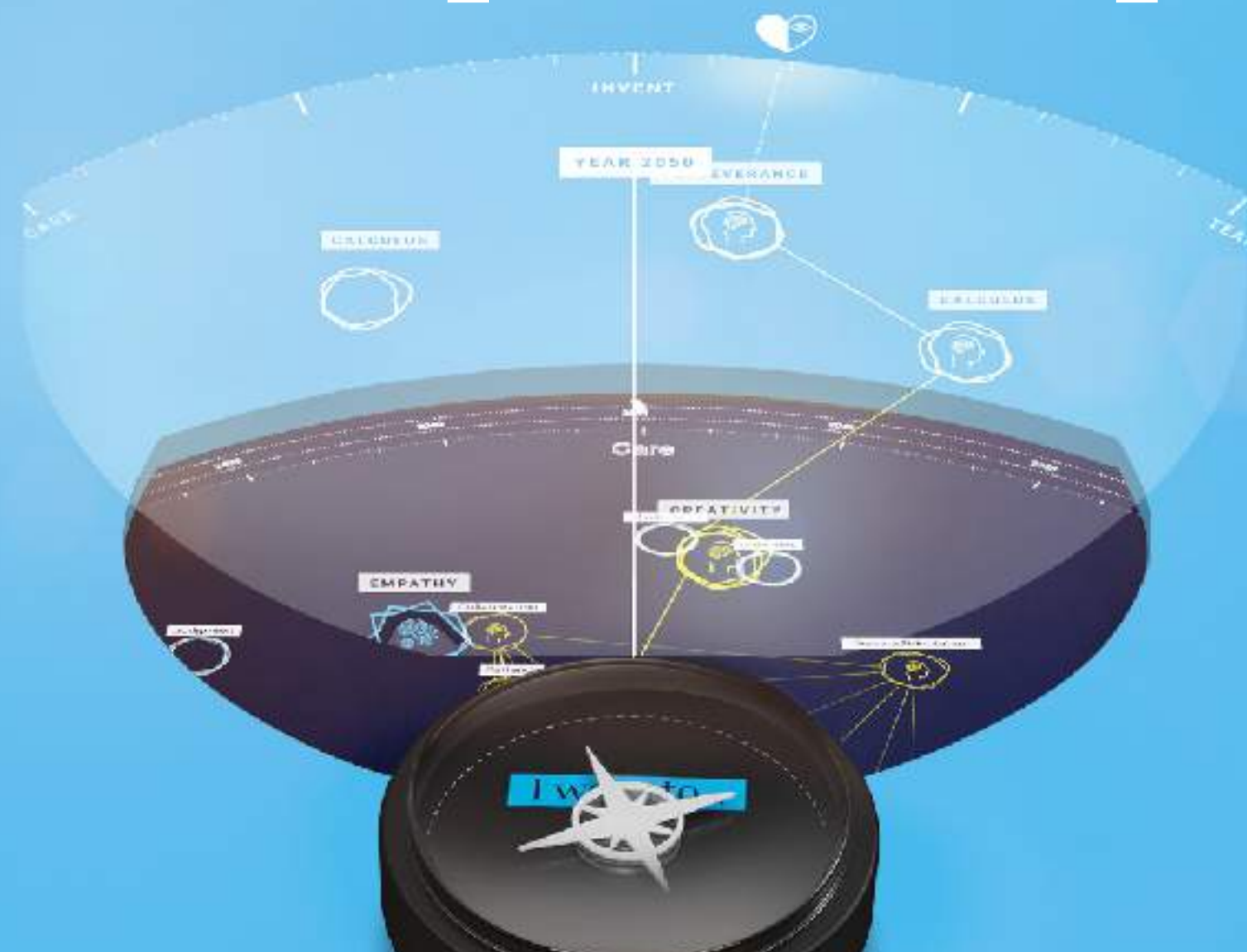
IDEO

# Creativity Mixer

**CREATIVITY IS LATENT, TOOLS MAKE IT ACCESSIBLE.**

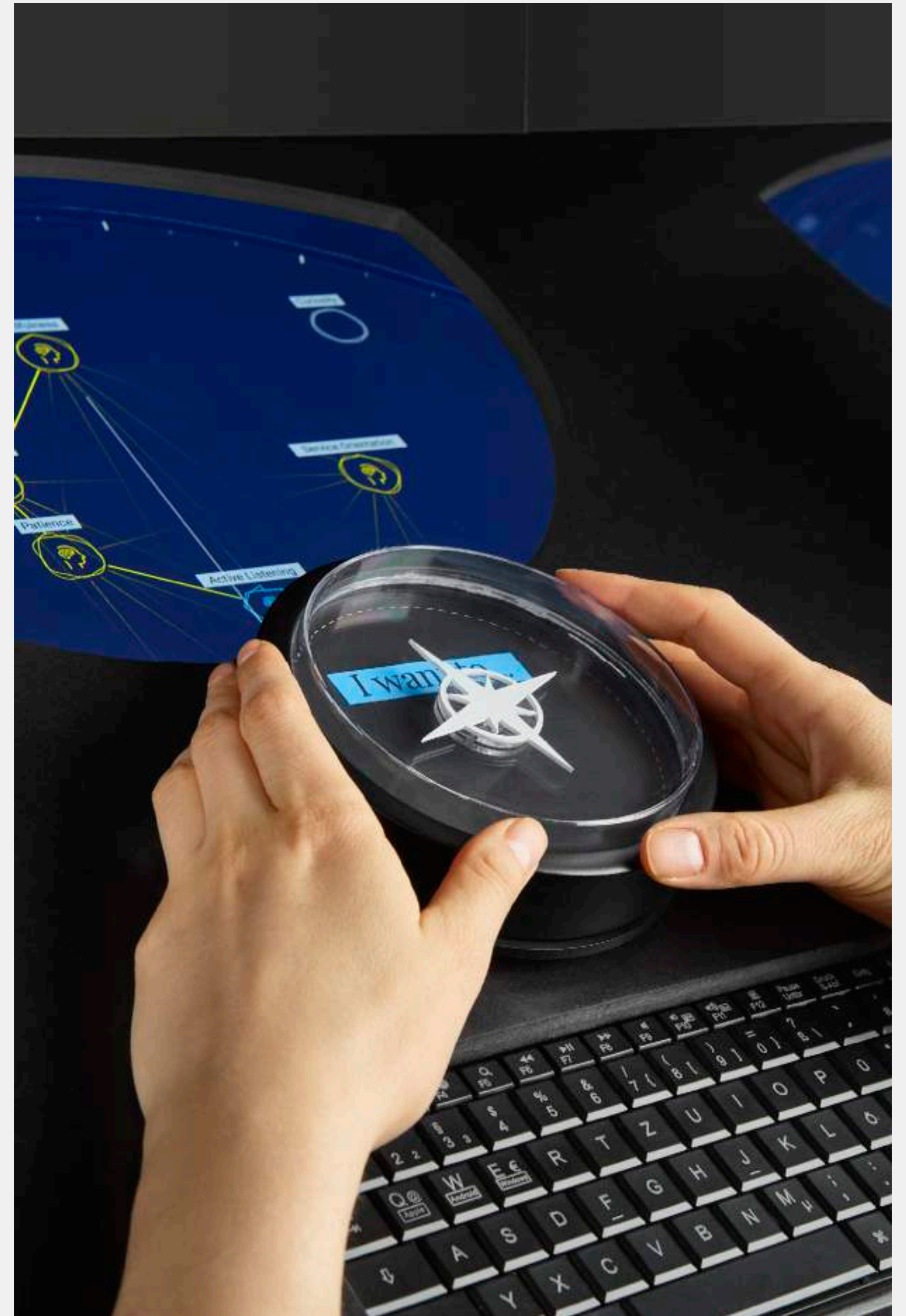


# The Purpose Compass

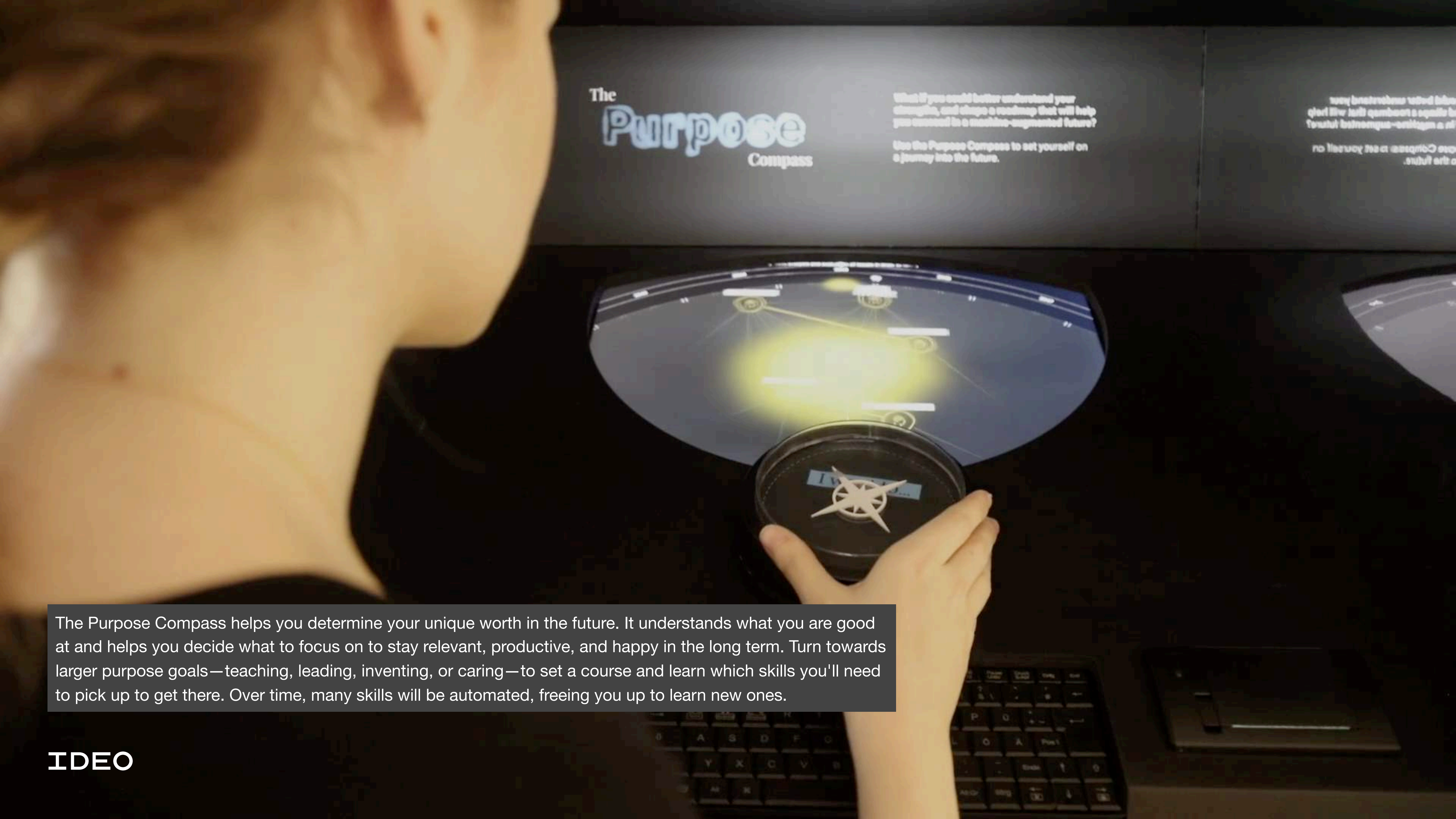


And lastly, The Purpose Compass: What if a machine could help you better understand your strengths? What if it could help you succeed in a machine-augmented future? Armies of robots already populate the factory floor and digital lawyers write our contracts. As intelligent machines become a fixture in every aspect of our work and lives, they inevitably start challenging our contribution to society, begging the question, do humans still matter? What is our purpose?

**IDEO**







# The Purpose Compass

What if you could better understand your strengths, and shape a roadmap that will help you succeed in a machine-augmented future?

Use the Purpose Compass to set yourself on a journey into the future.

new browser-based info  
port line with numbers a similar to  
Toshiba's business—only a bit  
no history for it. It's a bit of a  
future.

The Purpose Compass helps you determine your unique worth in the future. It understands what you are good at and helps you decide what to focus on to stay relevant, productive, and happy in the long term. Turn towards larger purpose goals—teaching, leading, inventing, or caring—to set a course and learn which skills you'll need to pick up to get there. Over time, many skills will be automated, freeing you up to learn new ones.



# The Purpose Compass

**PURPOSE IS SHAPED, NOT GIVEN.**

# INTERACTION DESIGN

---

*our era*

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**AI**



To close, I'd like to send you off with a message. Artificial Intelligence is fundamentally changing the world around us. It's our duty to bring humanity to the technology. To bring augmented intelligence into our future.



# INTERACTION DESIGN

---

*our era*

---

AI

---

We all should make sure we design that intelligence in ways that make us—and by us we mean every human being—better. There has never been a more exciting, and necessary time for this.

# INTERACTION DESIGN



*our era*



**AI**



With possibilities and opportunities come [IaD] responsibility. We are in the driving seat. So I would encourage you all to do what's our duty. **To bring this spirit to your craft.**



To augment people.

To make us better.

To make humans exceptional.

*to* **AUGMENT EVERYBODY** *and* **EVERYTHING IN BETWEEN.**



# **INTERACTION DESIGN** *in the era of AI\**

**MOMO ESTRELLA**  
**SENIOR DESIGN LEAD**

**IDEO**

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