

Throughout history, when people needed a product or object, they figured out a way to create it or found someone who could help them make it.

In 2023 innovation is at its forefront. Things that we once saw as an innovation years ago are being flipped upside down to improve upon.

Entrepreneurs, designers, start-ups, are looking at ways to make our lives better and we are seeing this every day.

But how did we get to this point?

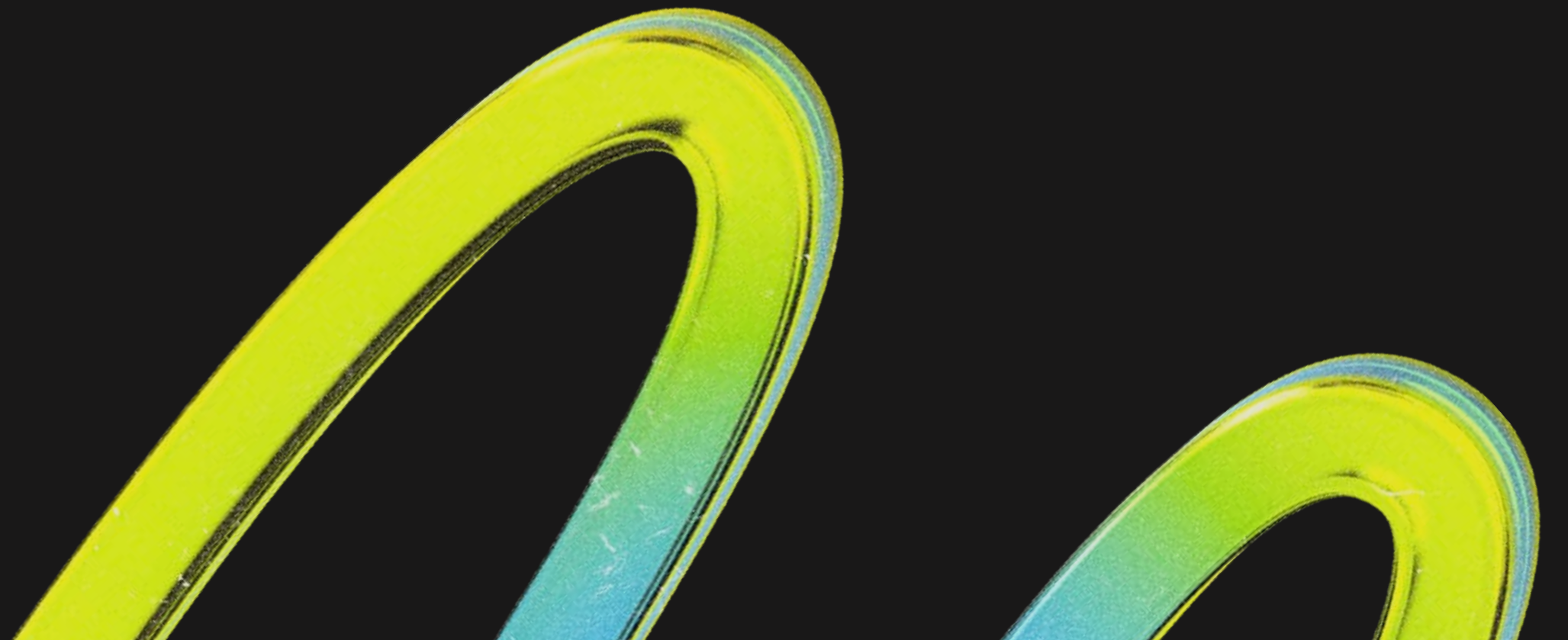
INDUSTRIAL

DESIGN

Daniel King ● Hasan Nazir ● Joseph Kallio-Myers ● Muhammad Ahmad ● Öykü Şahintaş ● Talha Waqar ● Timon Schapals

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- Definition
- History
- Good Design Principles
- Industrial Design Process
- Economics
- Trends
- Future Prospects



# Industrial Design

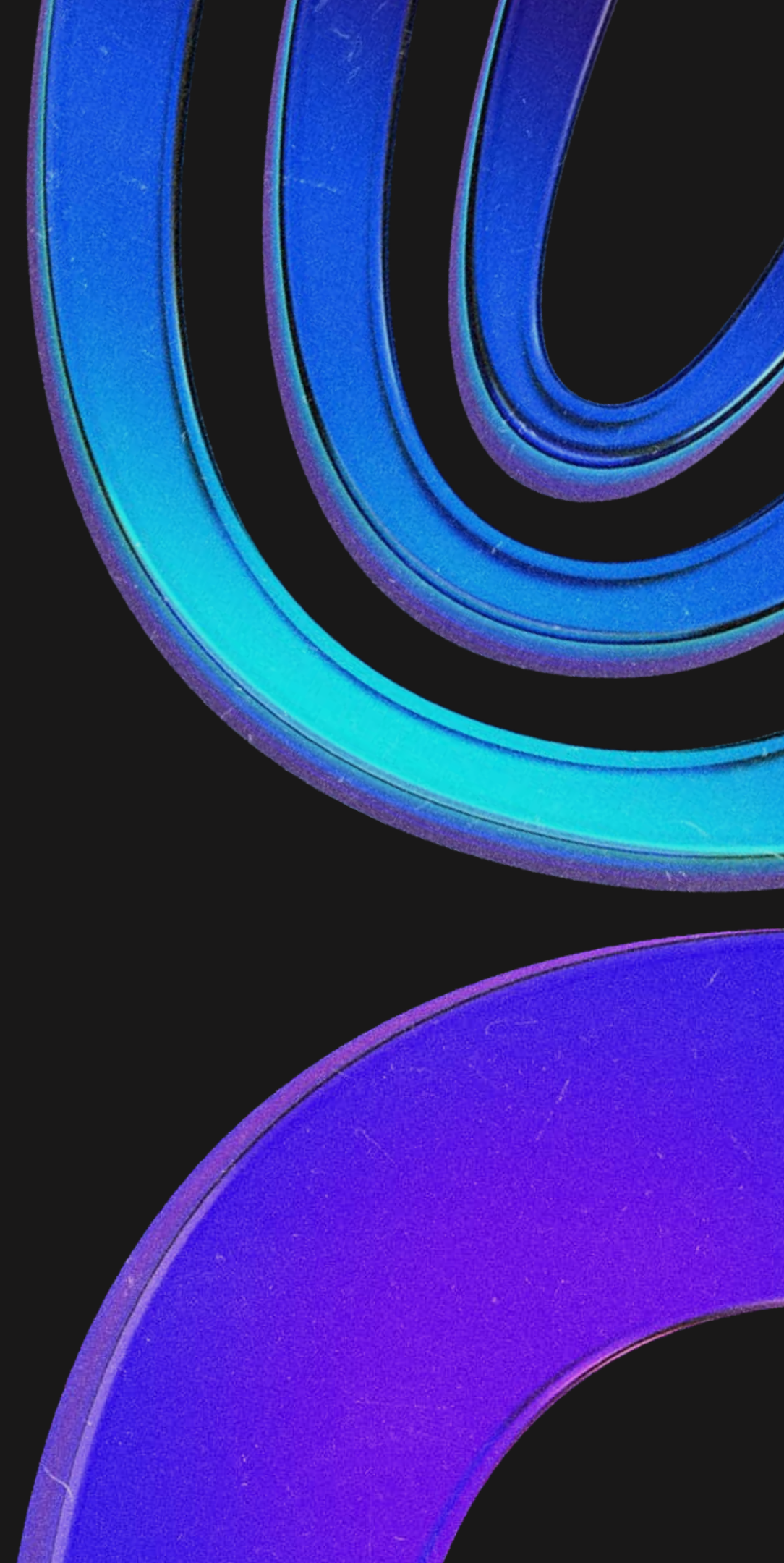
Industrial Design (ID) is the professional practice of designing products, devices, objects, and services used by millions of people around the world every day.

-Industrial Design Society of America (IDSA)

Industrial design is a process of design applied to physical products that are to be manufactured by mass production.

-Wikipedia

Industrial design is the application of arts and science for the improvement of aesthetics, architecture, ergonomics, functionality and usefulness of the specific product.



1900

1950

2000

2010

2020

Design as Craft



Design as Mass Production



Design as Styling



Design as User Interface



Design as Experience



The evolution of the design profession has mirrored development of the technology and the surround economy



# History of ID

1900

## Craft



- Individual Craftsmen
- Aesthetics

1950

## Mass Production



- Industrial Revolution
- Assembly Lines
- New Materials and Manufacturing Processes

## Ergonomics



- Beyond Aesthetic and Functional requirements
- MA.YA
- Most efficient machine is the one built around a person
- Simplicity as a guiding strategy

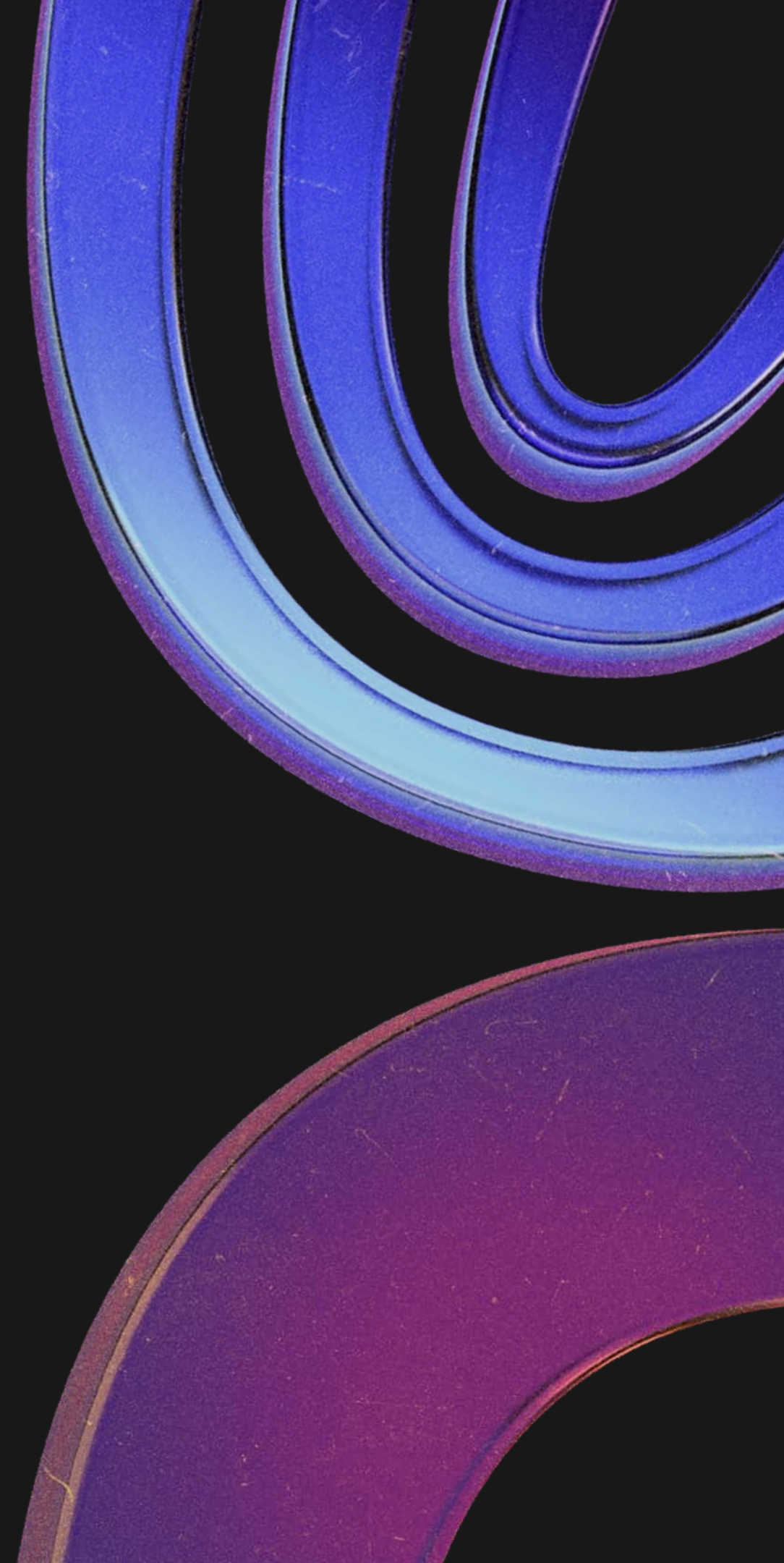
# MentiMeter Poll

Scan to Join



# The 10 Principles of Good Design

By Dieter Rams

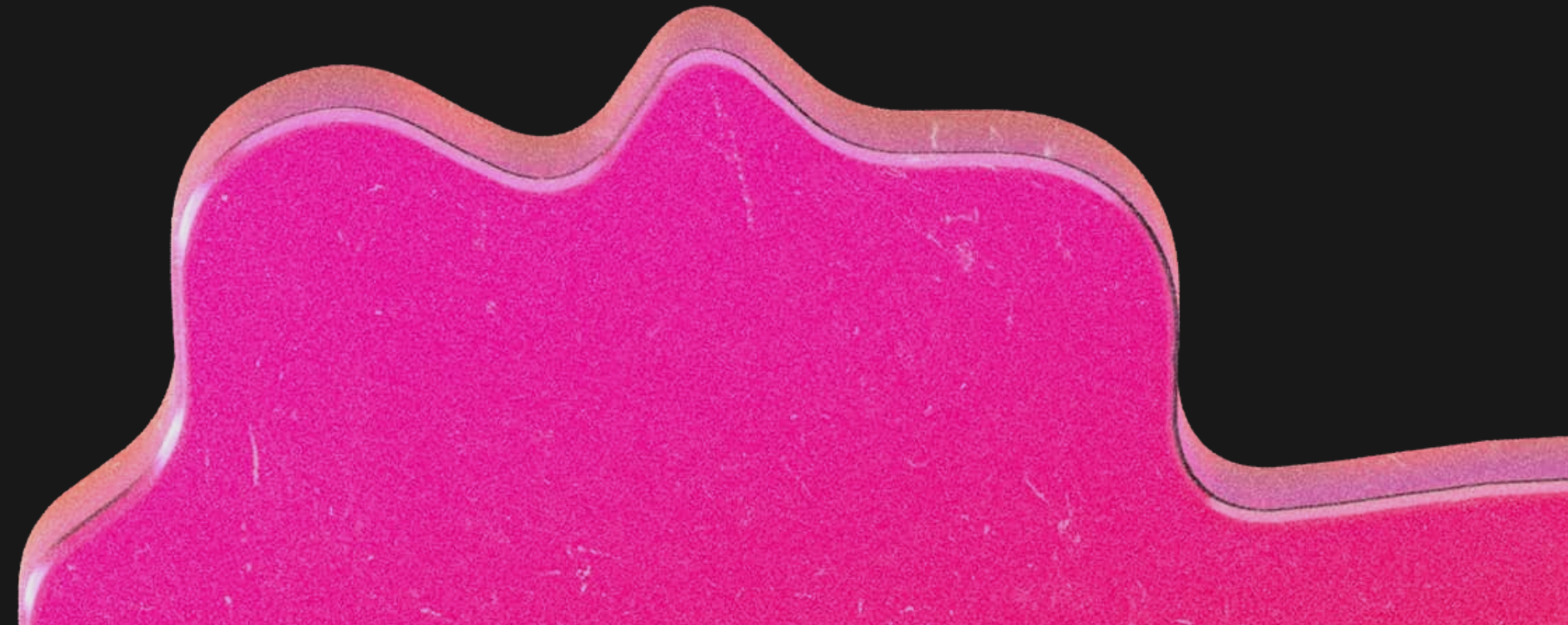




1. Good Design is  
Innovative



2. Good Design  
Makes a Product  
Useful

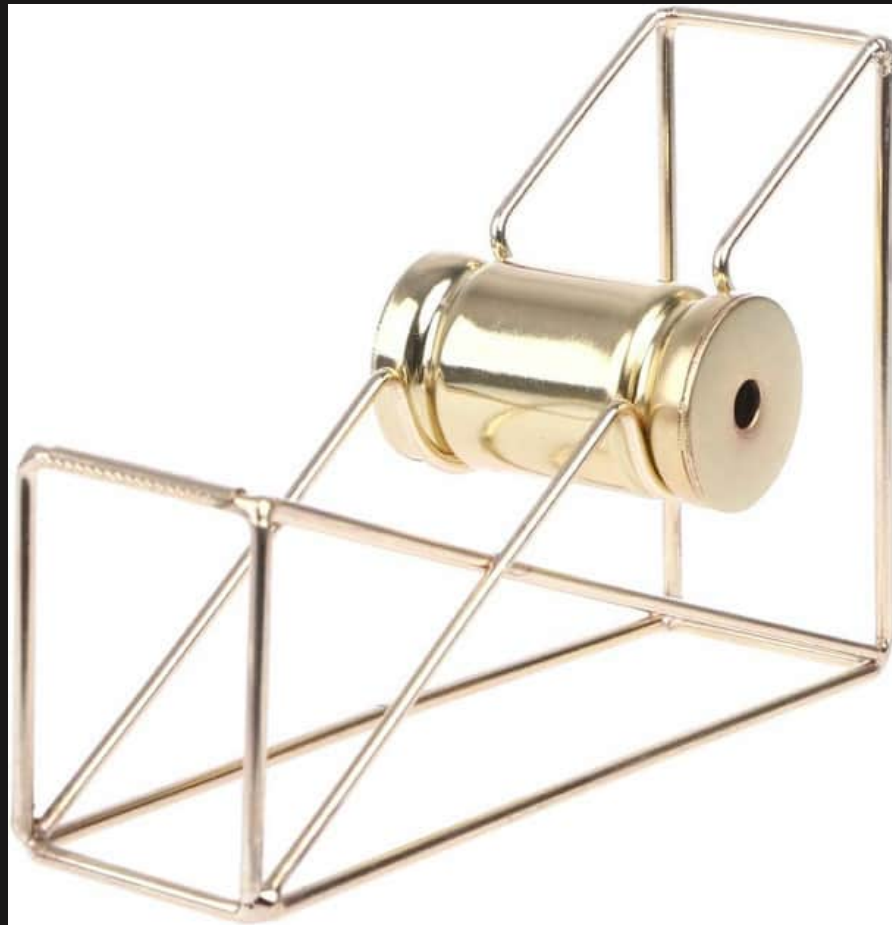




# 3. Good Design is Aesthetic







★★★★☆ **Pretty but no weight to it**

Reviewed in the United States on March 1, 2020

**Verified Purchase**

It looks pretty which is what I'm all about, & that it is! It's the function, being so lightweight, you need both hands and it doesn't work for wrapping presents.

Helpful

Report



★★★★☆ **too light**

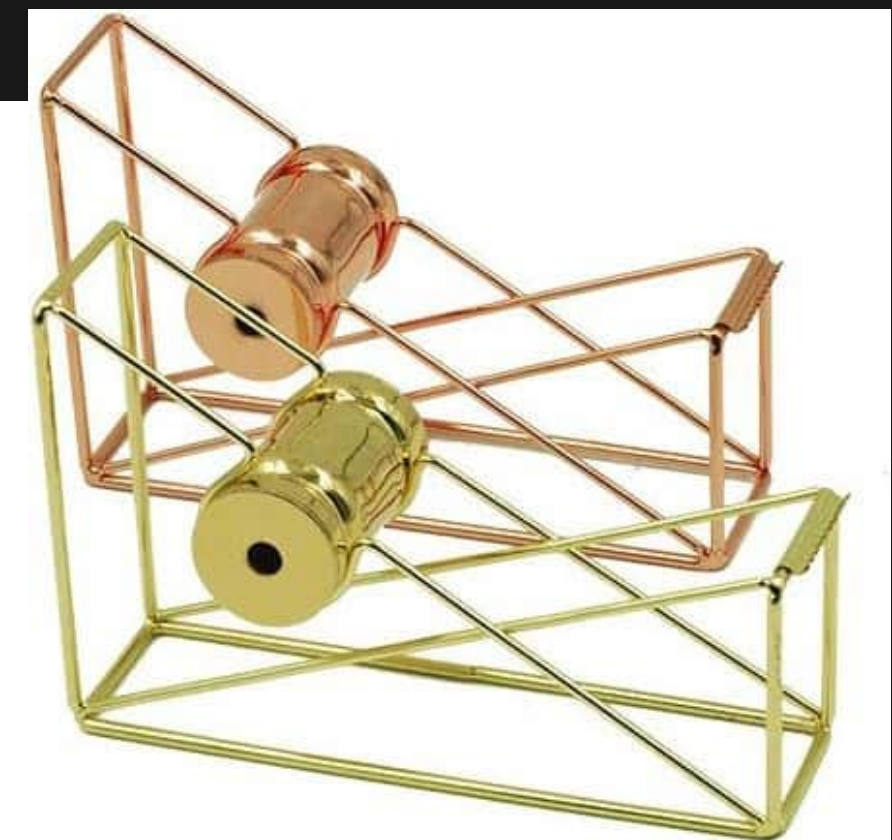
Reviewed in the United States on August 3, 2020

**Verified Purchase**

I love it but I had to tape it to my desk since its so lightweight

Helpful

Report



★★★★☆ **Bad design**

Reviewed in the United States on July 31, 2019

Color: Rose Gold 5 | **Verified Purchase**

There is no weight to this tape dispenser so when you grab the tape the dispenser comes with it. I needs to have mounting brackets or something. Would not buy again

Helpful

Report



★★★★★ **Prices**

Reviewed in the United States on June 29, 2019

Color: Rose Gold 5 | **Verified Purchase**

Love the style

Helpful

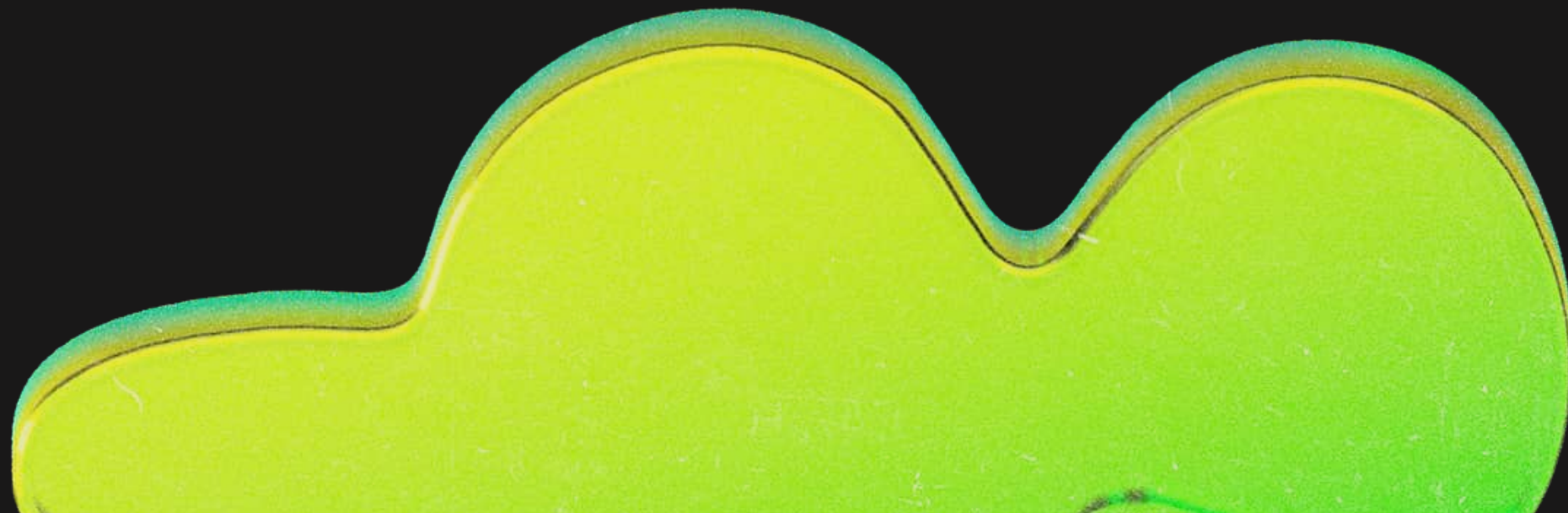
Report



4. Good Design  
Makes a Product  
Understandable



# 5. Good Design is Unobtrusive





# 6. Good Design is Honest



**PROTOTYPE  
IDEA  
ELEMENTS**  
*to learn more*

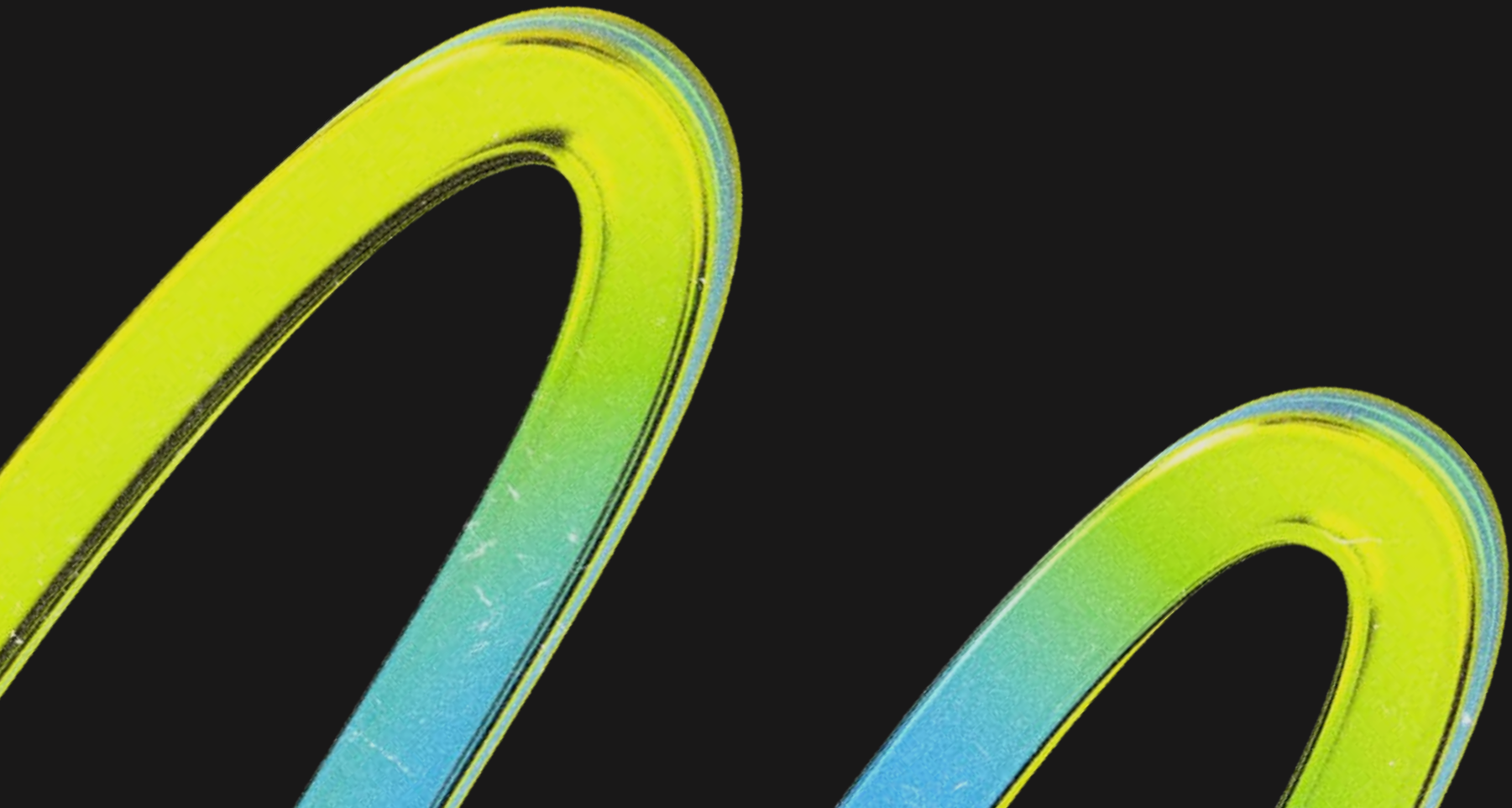
**take  
STO  
&  
SEL**  
idea



**Combine  
&  
improve**  
*the ideas  
from others!*

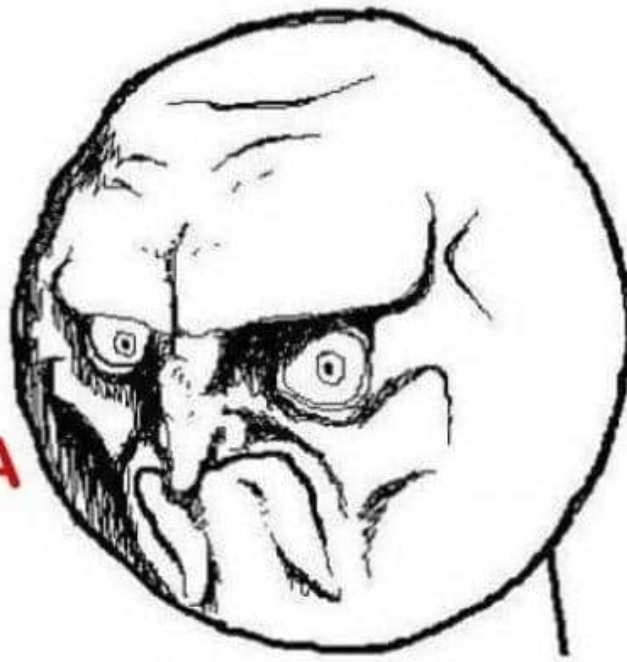
**Y  
dan**

# 7. Good Design is Long-Lasting

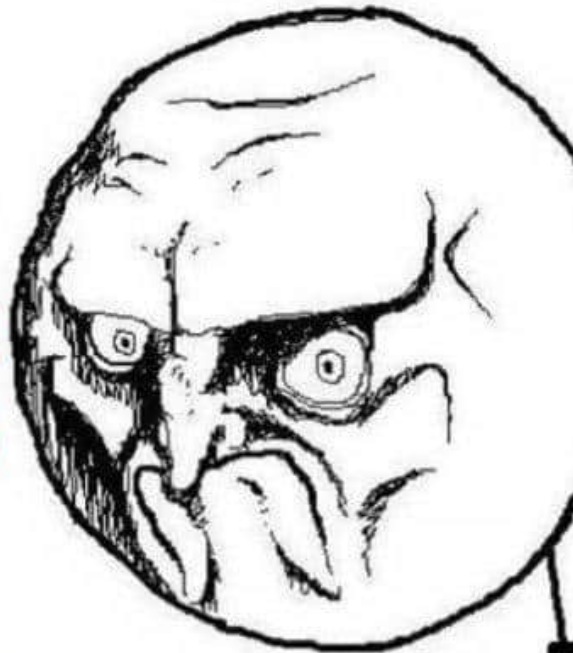


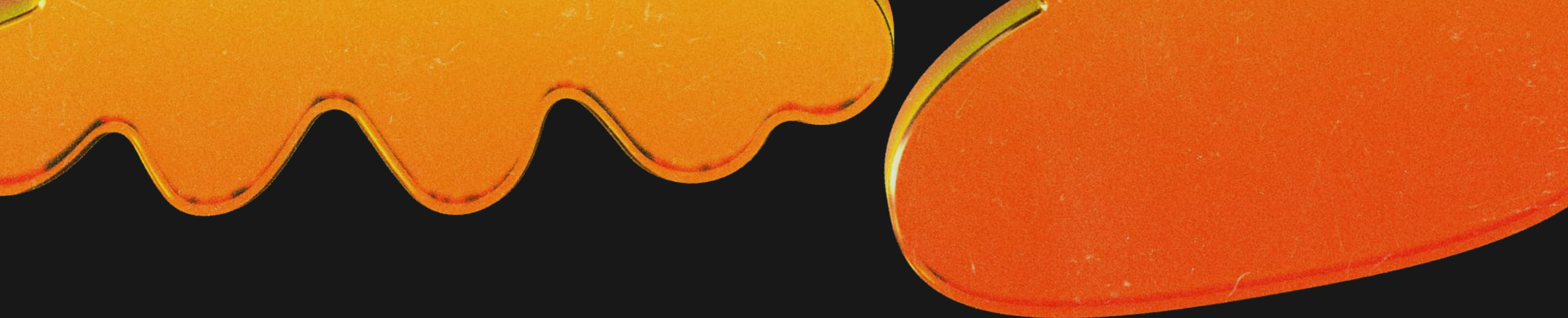


ENOUGH  
WITH  
THE NOKIA  
JOKES.




... DON'T  
MAKE ME  
USE THIS



The top of the slide features two orange decorative elements. On the left is a scalloped, wavy shape, and on the right is a smooth, rounded rectangular shape. Both are set against a solid black background.

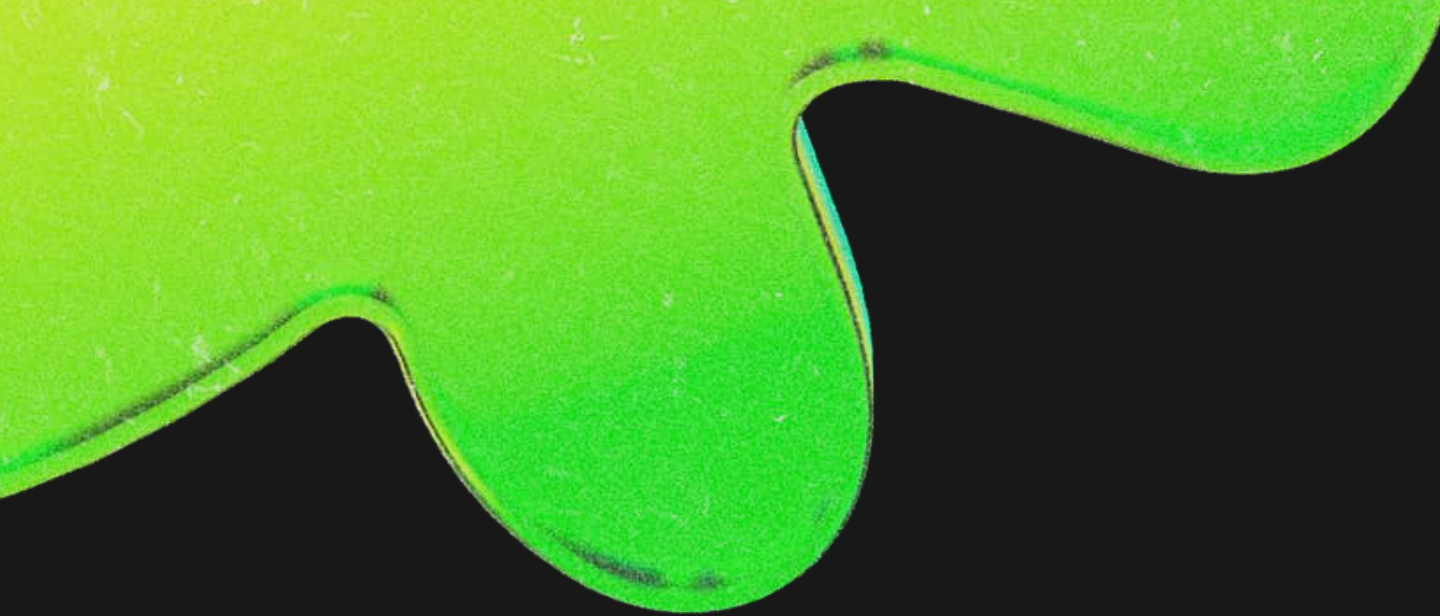
8. Good Design is  
Thorough Down to the  
Last Detail



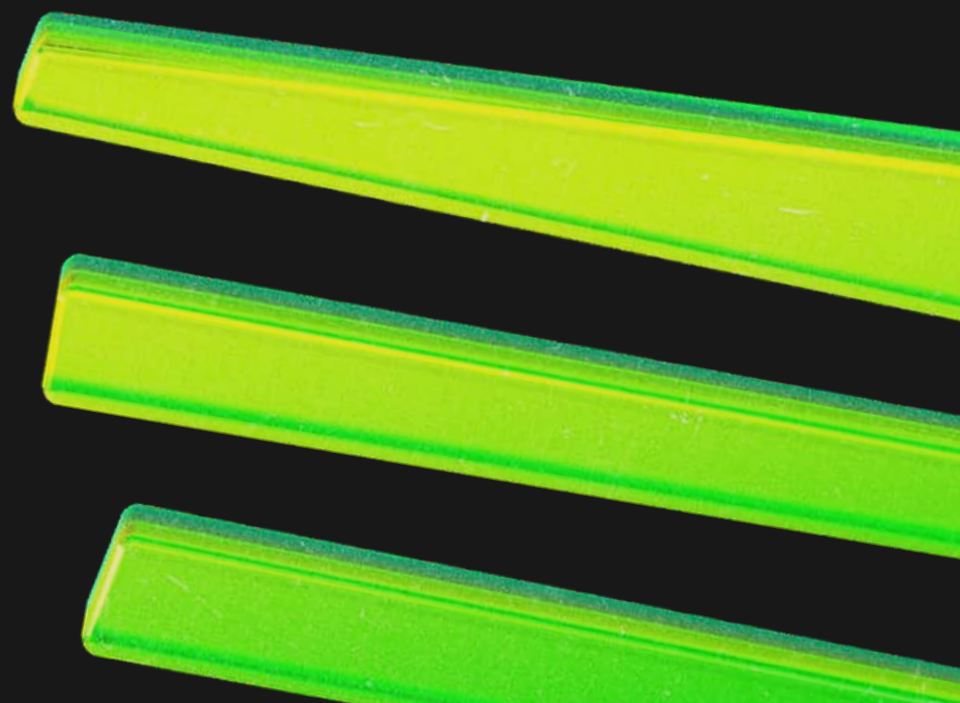


# 9. Good Design is Environmentally Friendly





10. Good Design is  
as Little Design as  
Possible





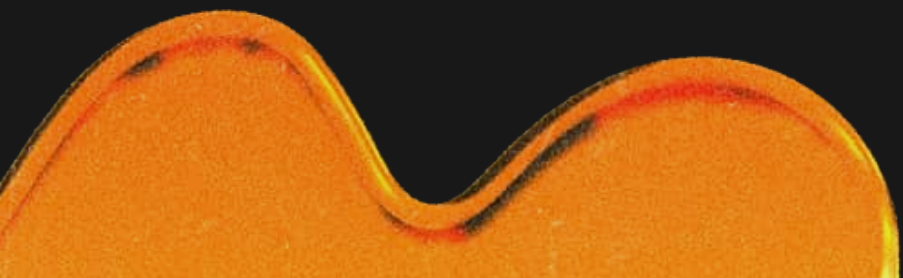
*"A designer knows he has achieved perfection not when there is nothing left to add, but when there is nothing left to take away."*

-Antoine de Saint-Exupéry



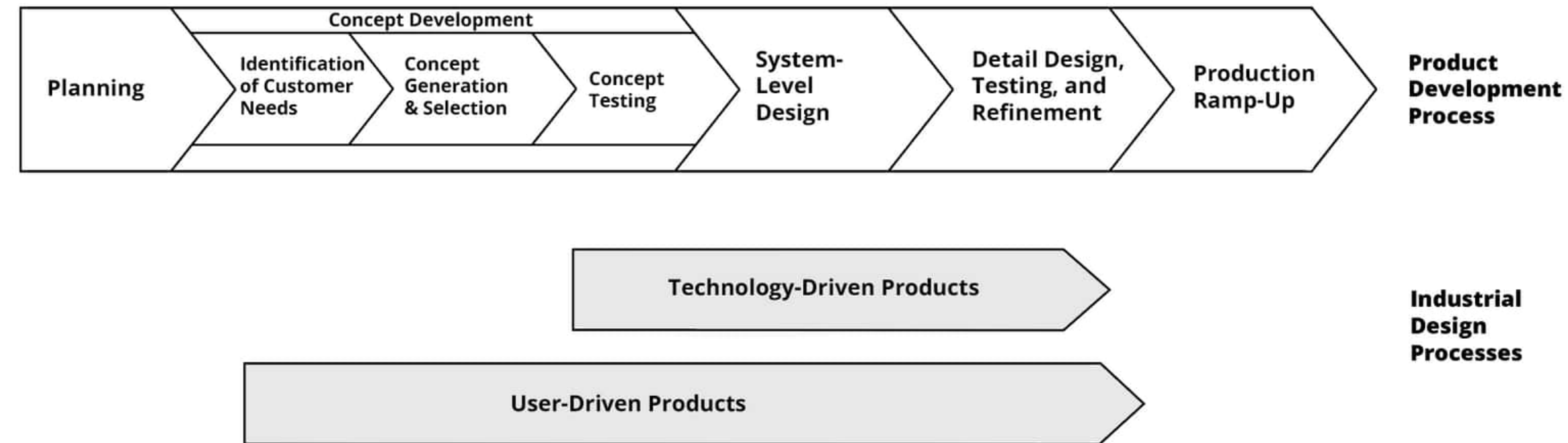
# Industrial Design Process

1. Investigation of customer need.
2. Conceptualization
3. Preliminary requirements
4. Refinement and final concept solution
5. Control design or drawings.
6. Coordination with engineering, manufacturing and external vendors.





# Industrial Design vs Product development

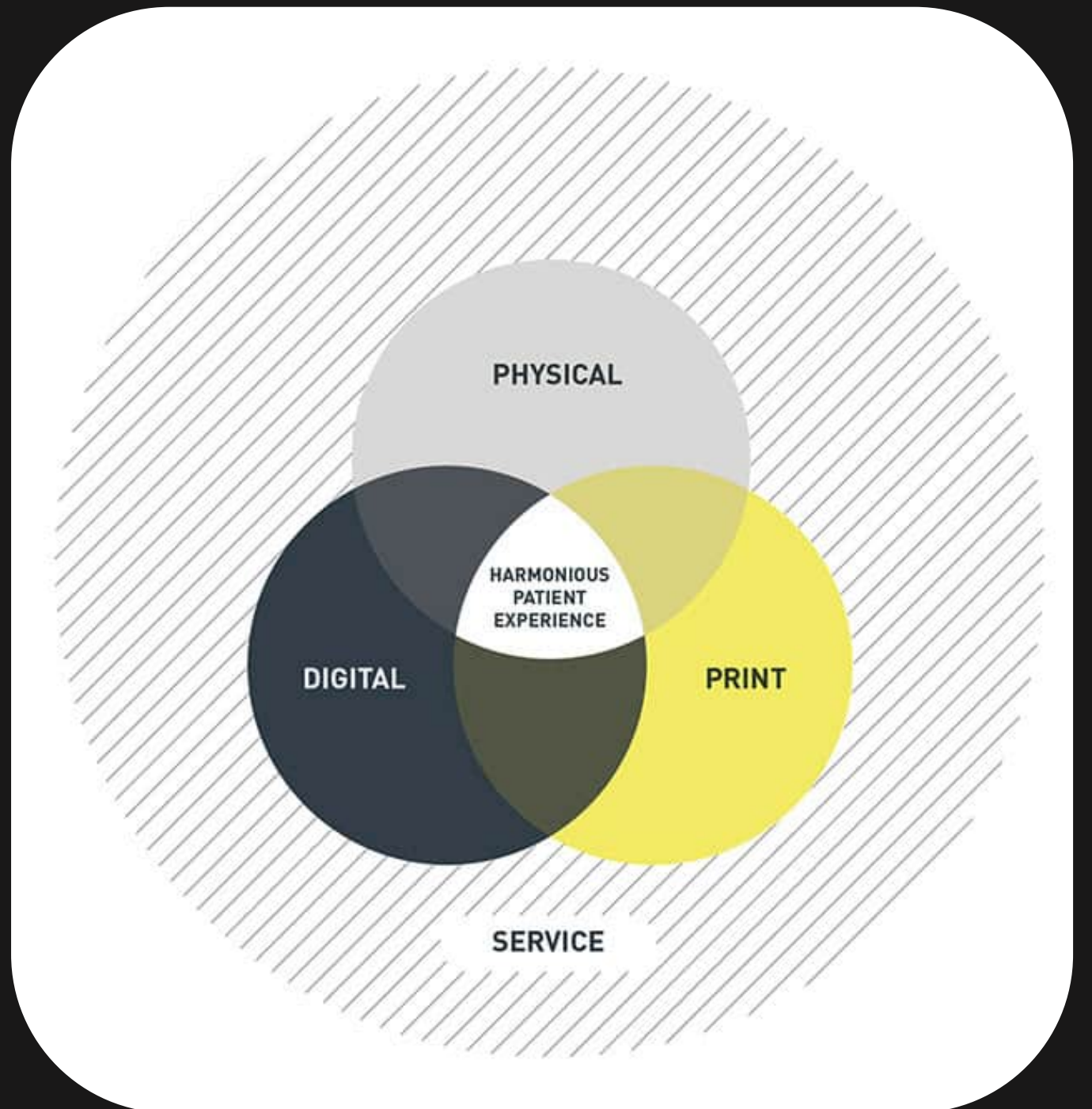


# Case Study: Aalto autoinjector



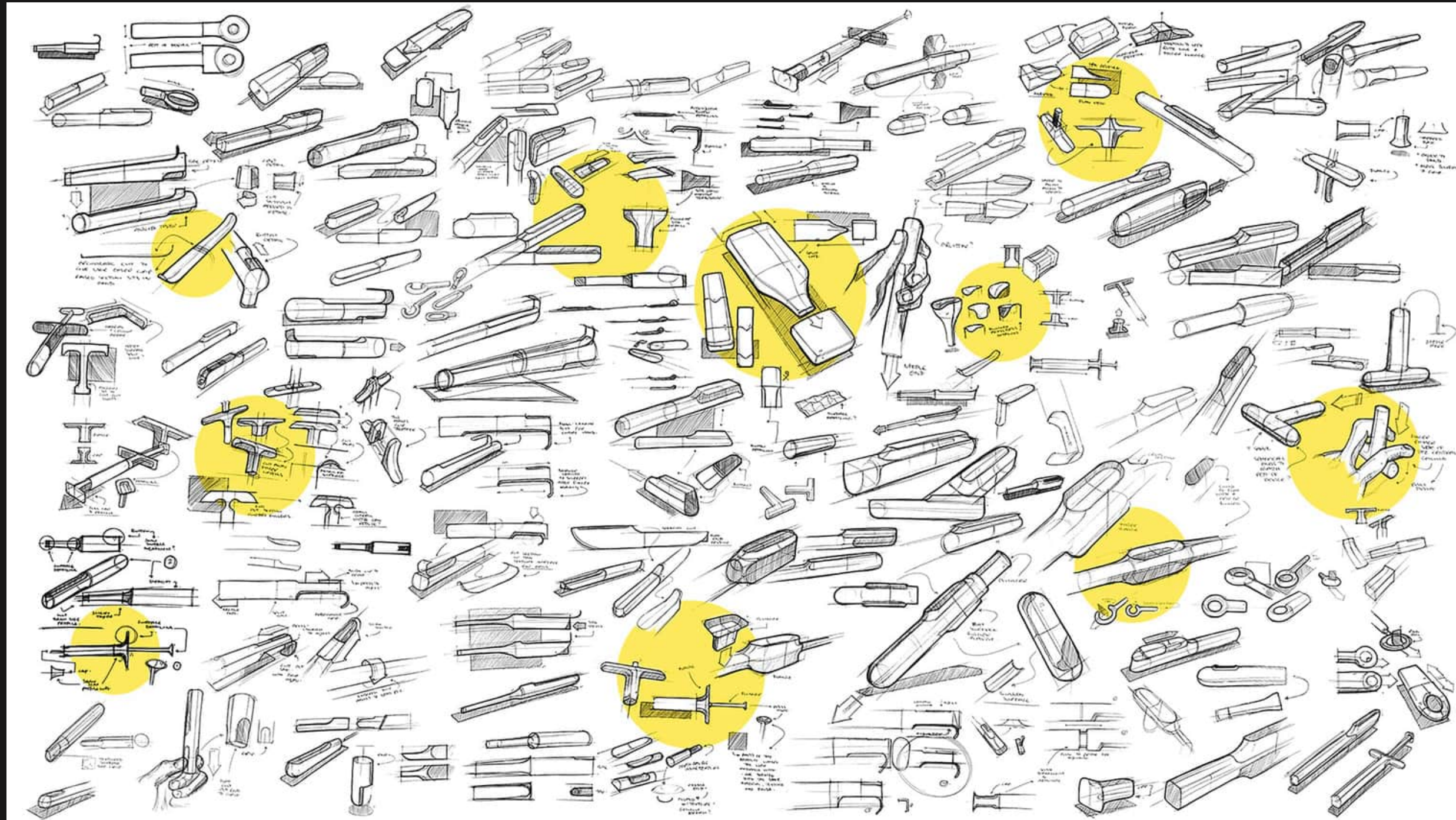
# 1. Identifying customer needs

- Research and gather insights about user preferences and pain points.
- Understand user expectations, functionality requirements, and the desired user experience.



# 2. Conceptualization

- Generate creative design ideas and concepts.
- Explore various design directions to address challenges and opportunities.



# 3. Preliminary report

- Iteratively refine the chosen design concepts to align with requirements.
- Develop a detailed 3D model and rendering of the final concept for visualization and testing.



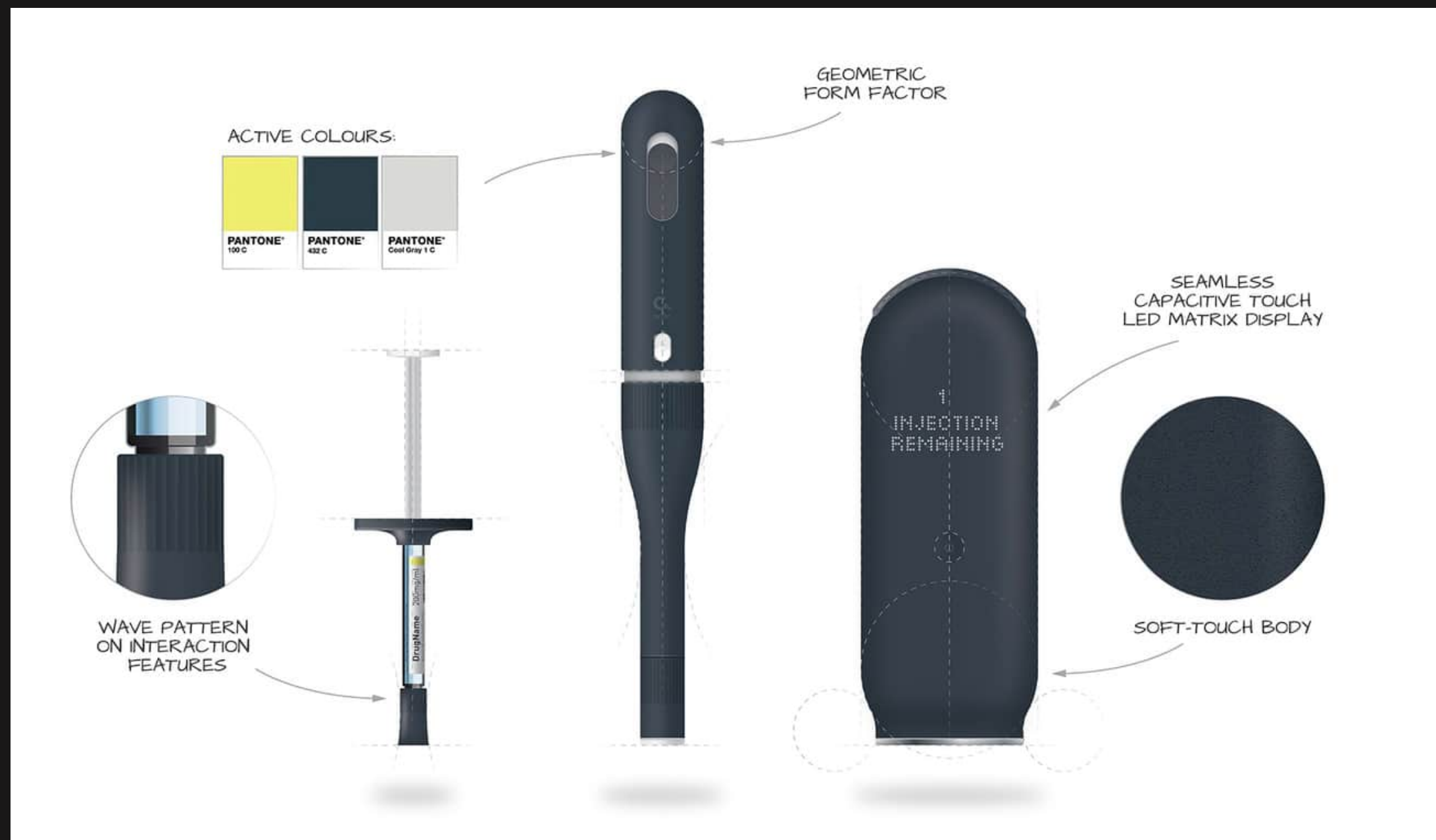
# 4. Refinement and final concept selection

- Refine the chosen design concept based on requirements.
- Create detailed renderings, prototypes, and mock-ups for visualization and testing.



# 5. Control Design or Drawings

- Develop comprehensive design documentation for manufacturing.
- Specify dimensions, materials, tolerances, and assembly instructions.



# 6. Coordination with engineers

- Collaborate with engineers to ensure technical feasibility.
- Work with manufacturing experts and vendors to source materials and components.





# Brand Identity

*"Calmly delivering a healthy, active lifestyle"*

## Active

Encouraging their patients to live an active and energetic lifestyle



## Trust

Patients may stop taking treatment if they don't see an immediate benefit, so it is important that they trust the delivery device, drug and Pharma company.

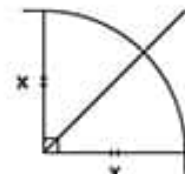


## Calm

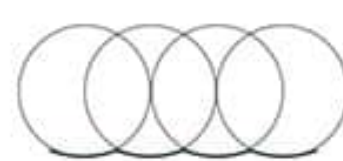
Self-injection can lead to anxiety. Therefore, providing a sense of calm.



Colour



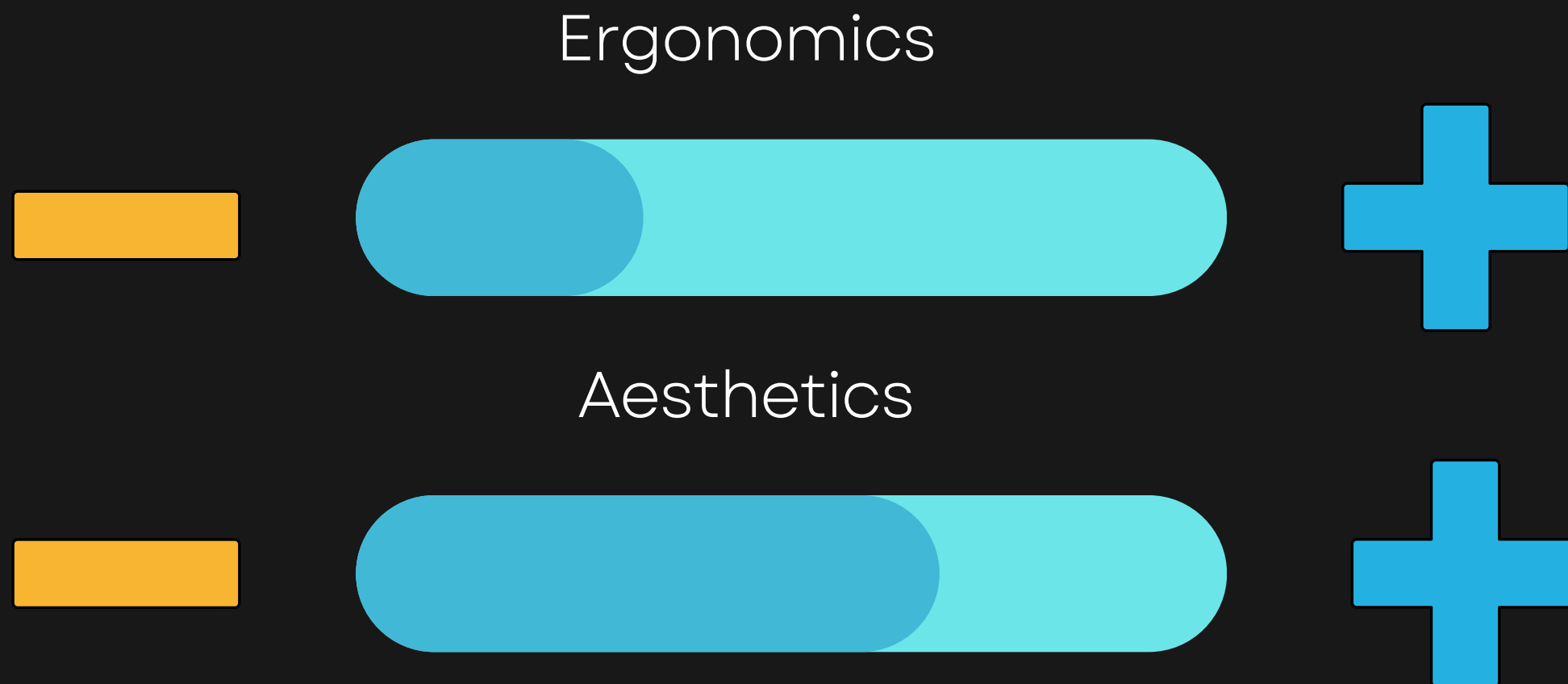
Shape



Pattern

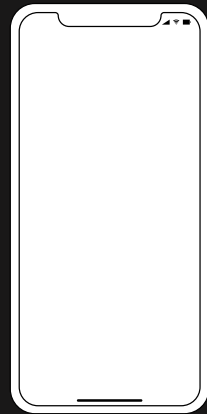
# Economics

How much to invest in ID?

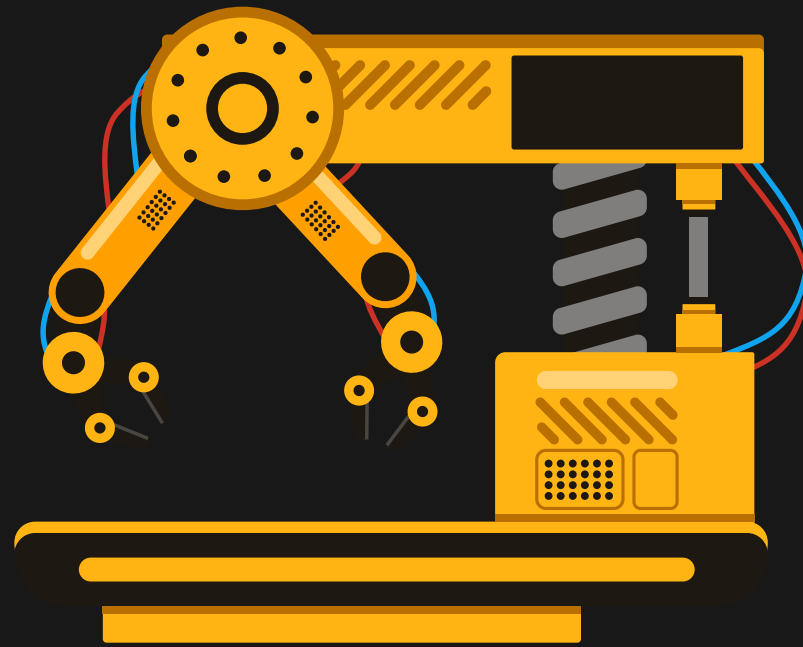


# Costs of ID

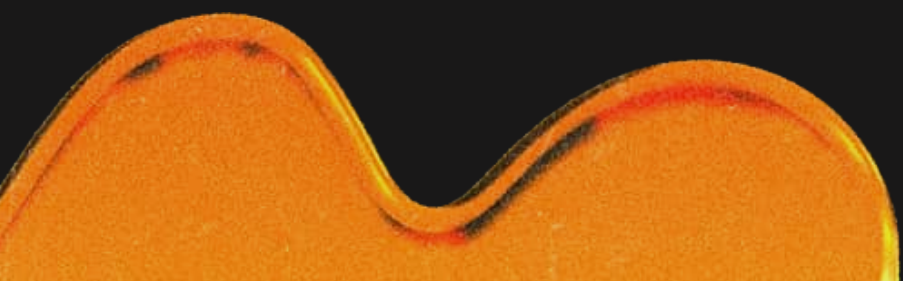
Direct



Manufacturing



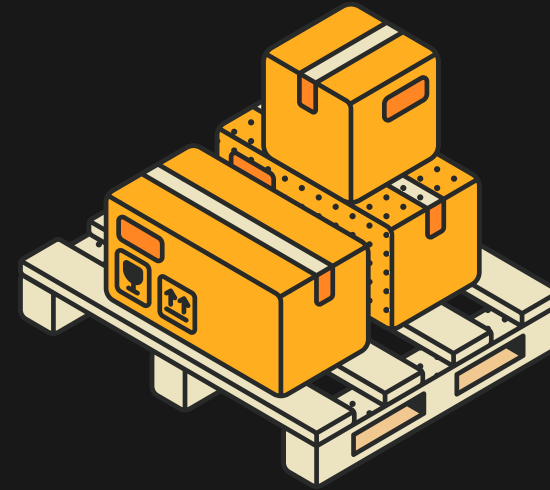
Time



# Payout of ID



Price premium or market share



Estimated Lifetime Sales X Price Premium > Planned ID Investment

Estimated Lifetime Sales Increase X Product Price > Planned ID Investment

# Evaluation of ID

**Emotional Appeal**

**Use of  
Resources**

**Maintainability/  
Repairability**

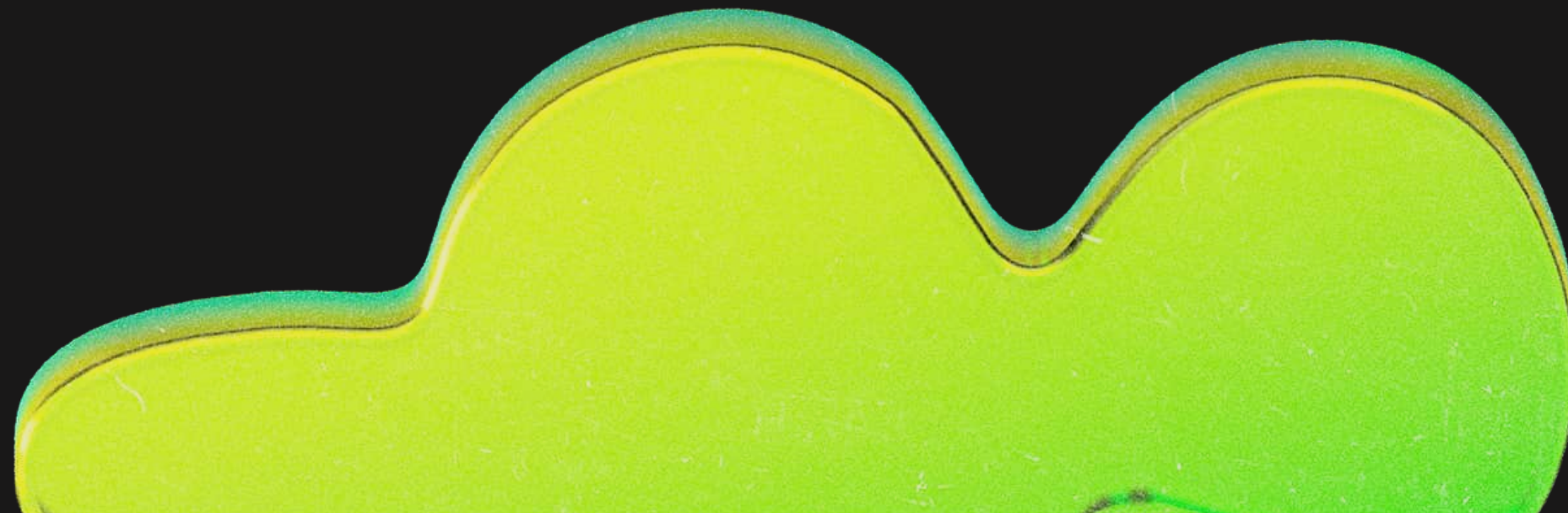
**UI**

**Product Differentiation**



# Bad Design

— Sometimes it just goes wrong ...



# Dyson Zone

- 6 years, 500 prototypes.
- Inspired by horse saddle.
- \$949 pricetag.

WHAT HAPPENS WHEN TWO ZONES KISS —

## Not an April Fool: Dyson announces apocalyptic filter-headphone combo

Clever engineering shrinks filter—but Ars' chief weird-mask tester has concerns.

SAM MACHKOVECH - 3/31/2022, 9:57 PM



Expectation



Reality

# Trends in ID

Cloud-Based Product Design



Advanced XR Tools



Sustainable and Eco-friendly Design



Biomimicry



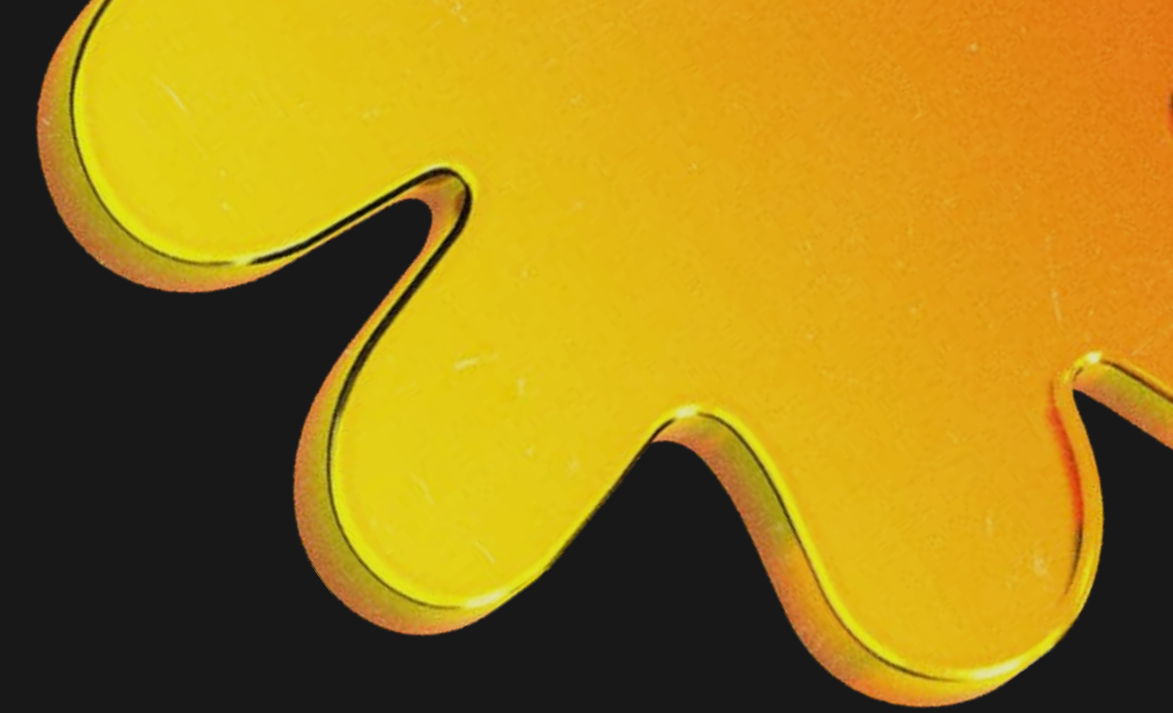
Smart and Connected Products



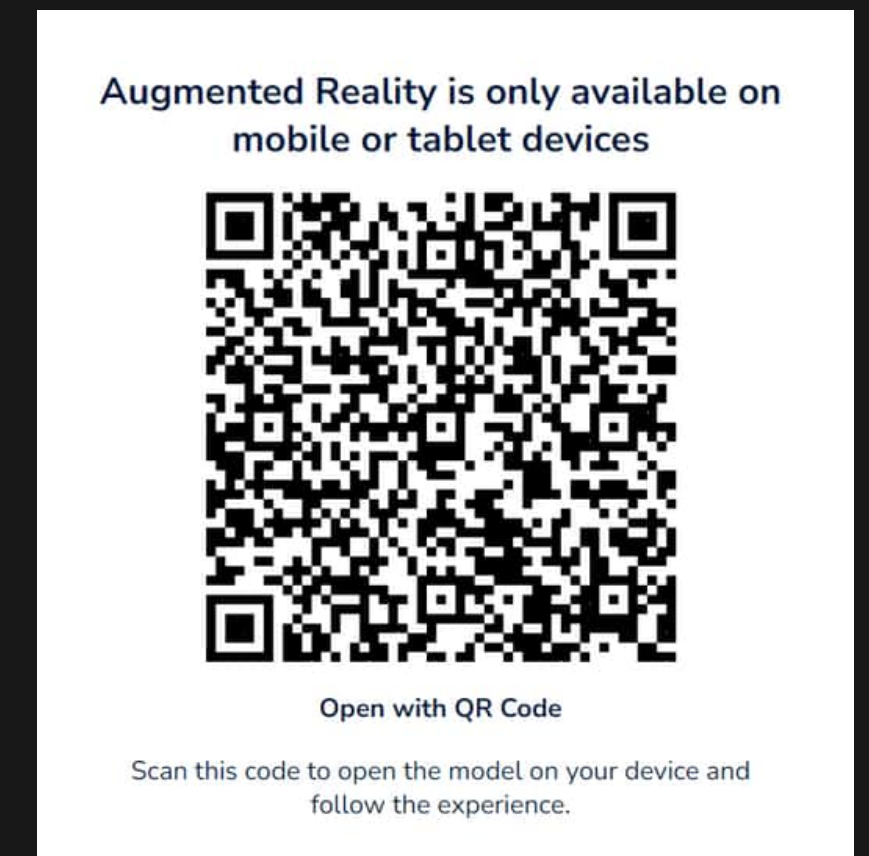
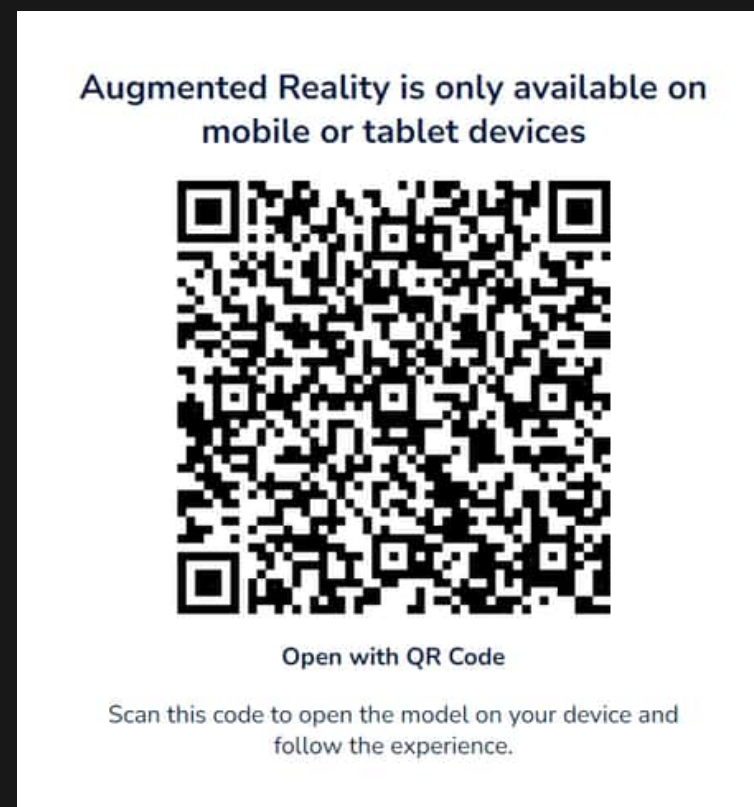


# Time to Discover!

1. Download the App



2. Scan One of the QR Codes





# Future Prospects

**Two important advances:**

**AI**

Artificial  
Intelligence

**AM**

Additive  
Manufacturing

**AM**

# How will AM influence ID?

Manufacturability considerations are important in ID.

The forces that affect  
mass production, are all, more or less

- Tooling costs
- Scale of production
- Size of series

ignored  
by AM.

**COST-FREE COMPLEXITY**

**AI**

# How is AI affecting ID?

## Generative design

Designer defines the problem, AI provides with solutions.

**Tools concept generation and ideation**

Already becoming widespread

**More application specific, AI-driven tools**

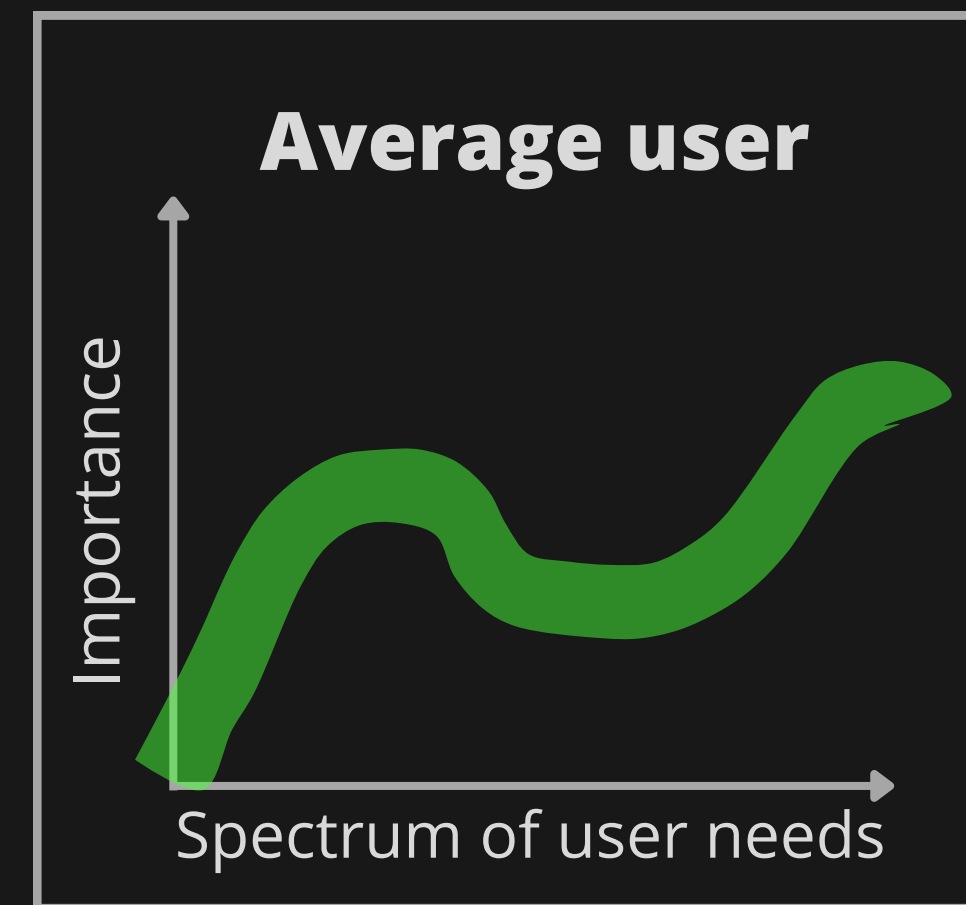
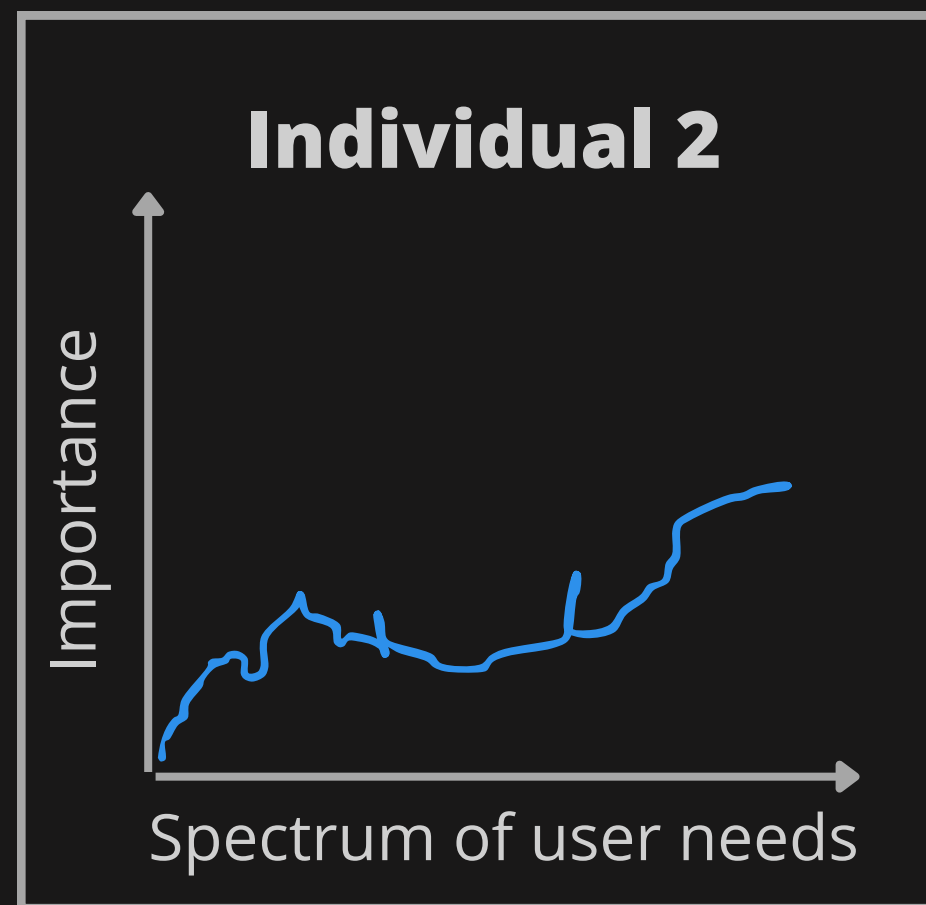
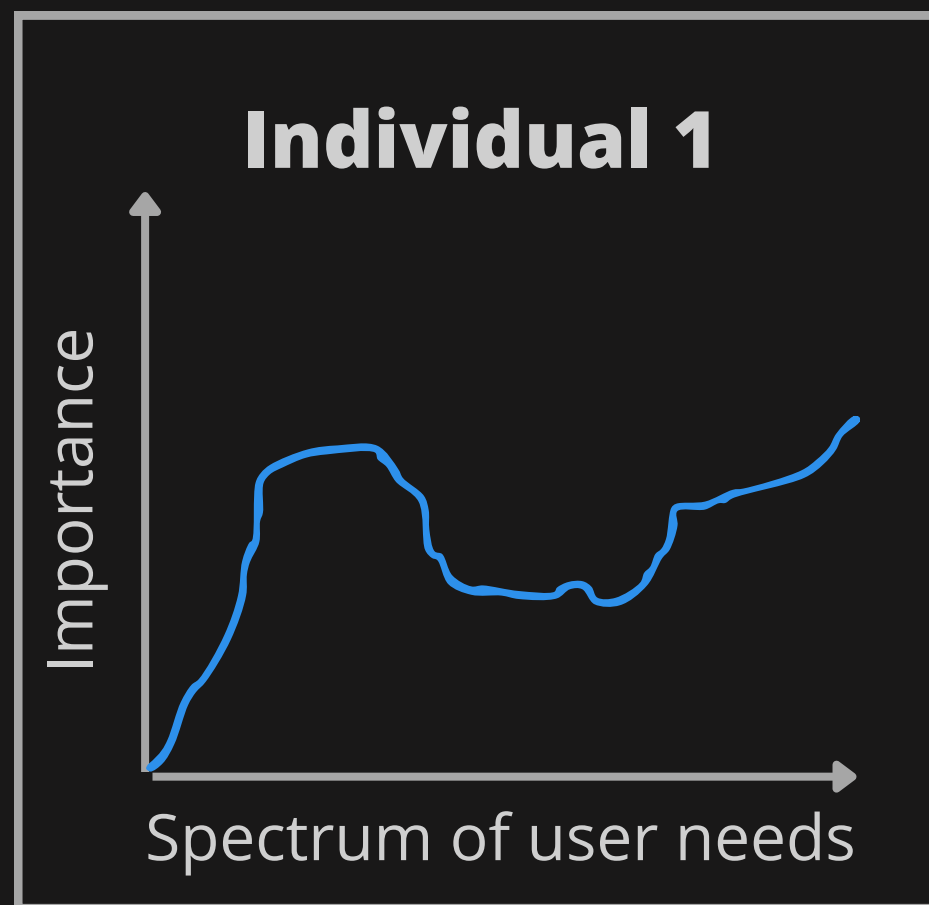
On the cusp

**COST-FREE COMPLEXITY**

AI

# How will AI affect ID?

Can AI be used to identify user needs, i.e., define the problem?



Needs of individuals

Needs catered to by ID

Aravind Srinivas    
@AravSrinivas

"a car designed by steve jobs" #dalle

[Käännä julkaisu](#)



2.33 ap. · 10. huhtik. 2022

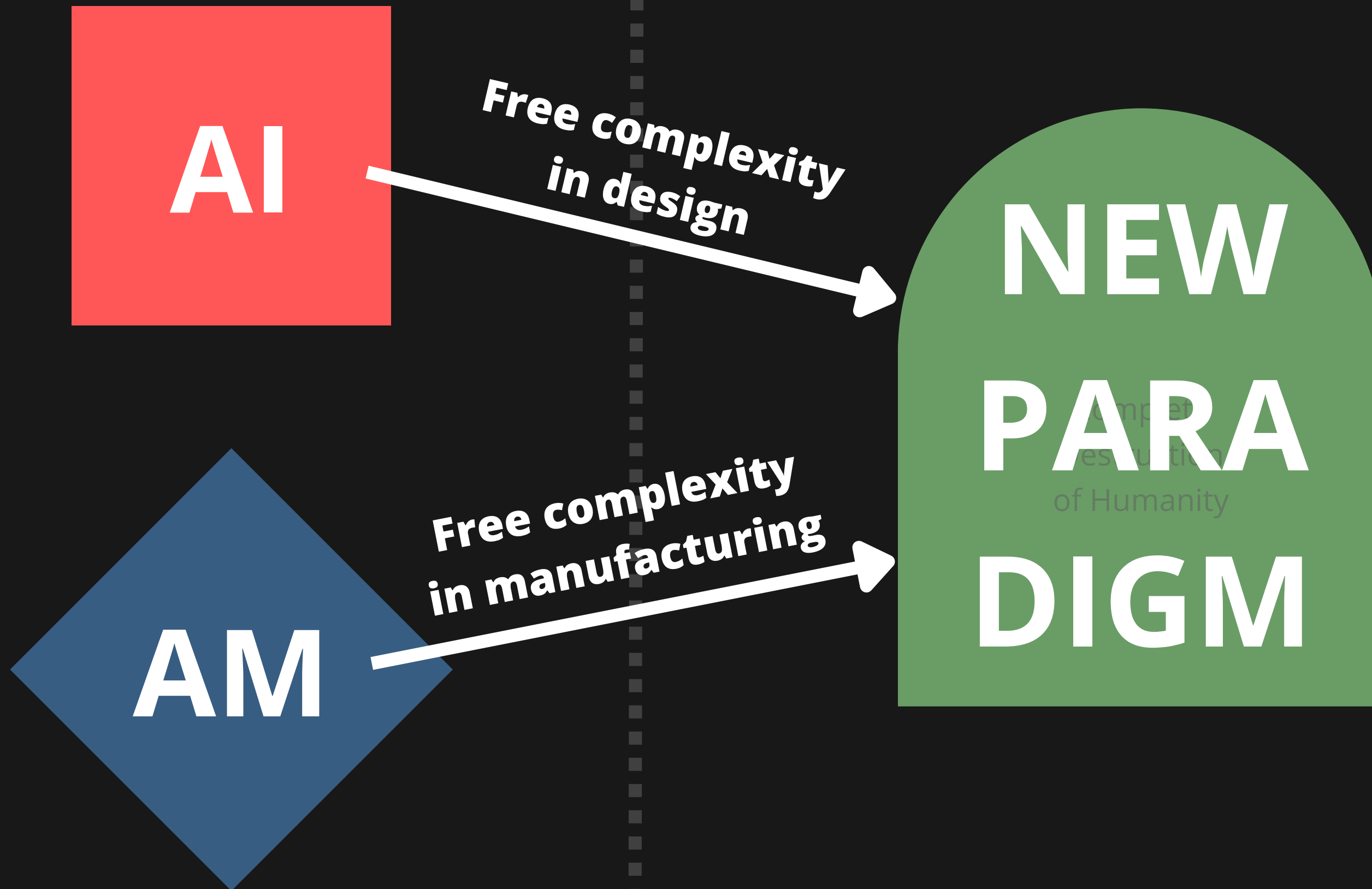


This sneaker does not exist



[thissneakerdoesnotexist.com](http://thissneakerdoesnotexist.com)

# Future Prospects in ID



- **Mass customization.**
- **New aesthetic trends in ID.**
- **Breakdown of product categories.**



**On the complexity of nature,  
Thomas Aquinas:**

*“Our manner of knowing is so  
weak that no philosopher could  
perfectly investigate the nature of  
one little fly”*

**The future is going to be strange.**

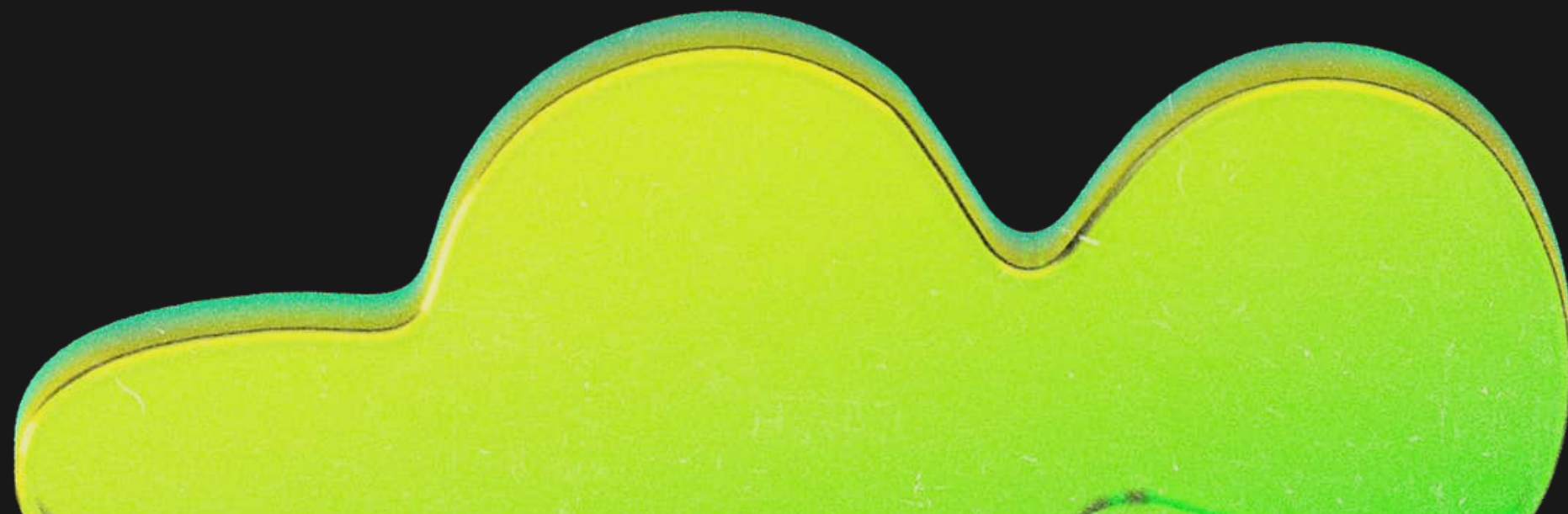
AI



AM



Discussion.





Augmented Reality is only available on mobile or tablet devices



Open with QR Code

Scan this code to open the model on your device and follow the experience.

Augmented Reality is only available on mobile or tablet devices



Open with QR Code

Scan this code to open the model on your device and follow the experience.