



MIRS • ISEG • May 14<sup>th</sup>

# How to manage innovation from the perspective of a startup — a personal journey

Paulo Dimas

パウロ・ディマシュ

VP of Product Innovation





← Paulo

**Joined Unbabel in 2015**



Paulo



DECLARATION OF INTERDEPENDENCE

|                                    |                                    |                       |
|------------------------------------|------------------------------------|-----------------------|
| 1<br>RESPECT YOUR WORK             | 2<br>RESPECT YOUR TOWER            | 3<br>RESPECT OTHERS   |
| 4<br>RESPECT YOURSELF              | 5<br>BE EXTRAORDINARY              | 6<br>BE SWIFT         |
| 7<br>GIVE FEEDBACK<br>GET FEEDBACK | 8<br>KEEP LEARNING<br>KEEP GROWING | 9<br>GET SHIT<br>DONE |

# Unbabel 2016 • First Retreat





Paulo



**Last Unbabel Retreat • Nazaré**





**Leading Unbabel Labs...**





...and the Center for Responsible AI

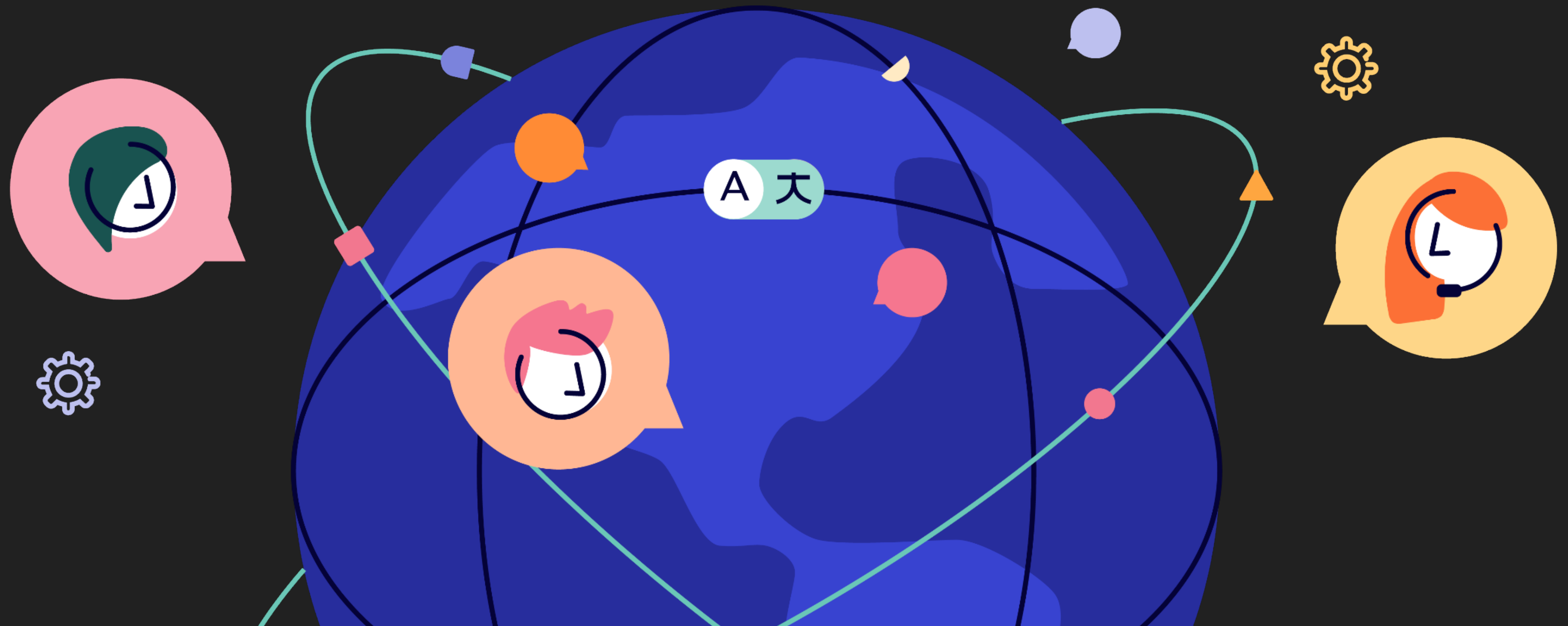




# About Unbabel



# Building the World's Translation Layer









# Some key information

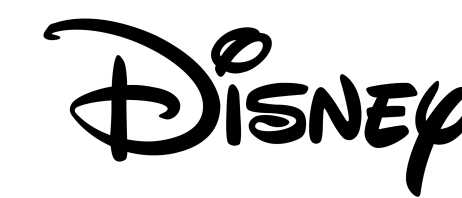
3.5bn  
Words per Year

380  
Customers

340  
Employees

+\$100m  
Raised

A few well known customers

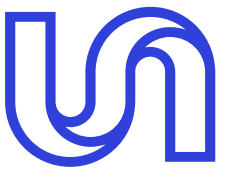




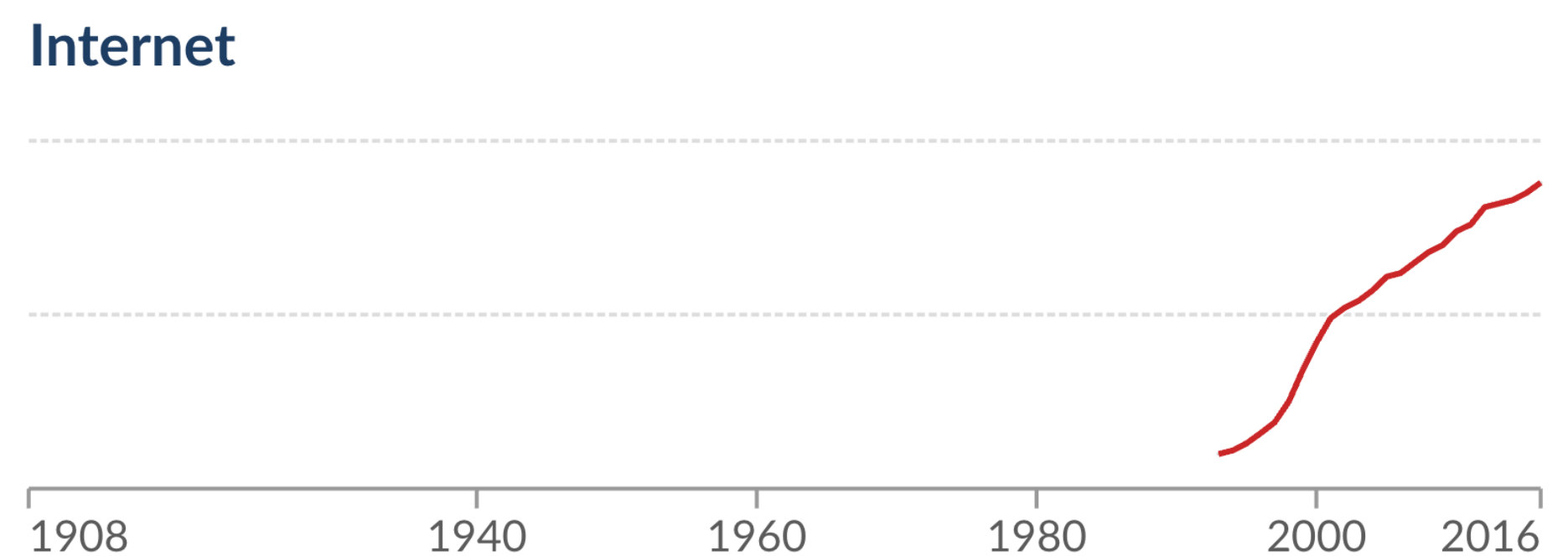
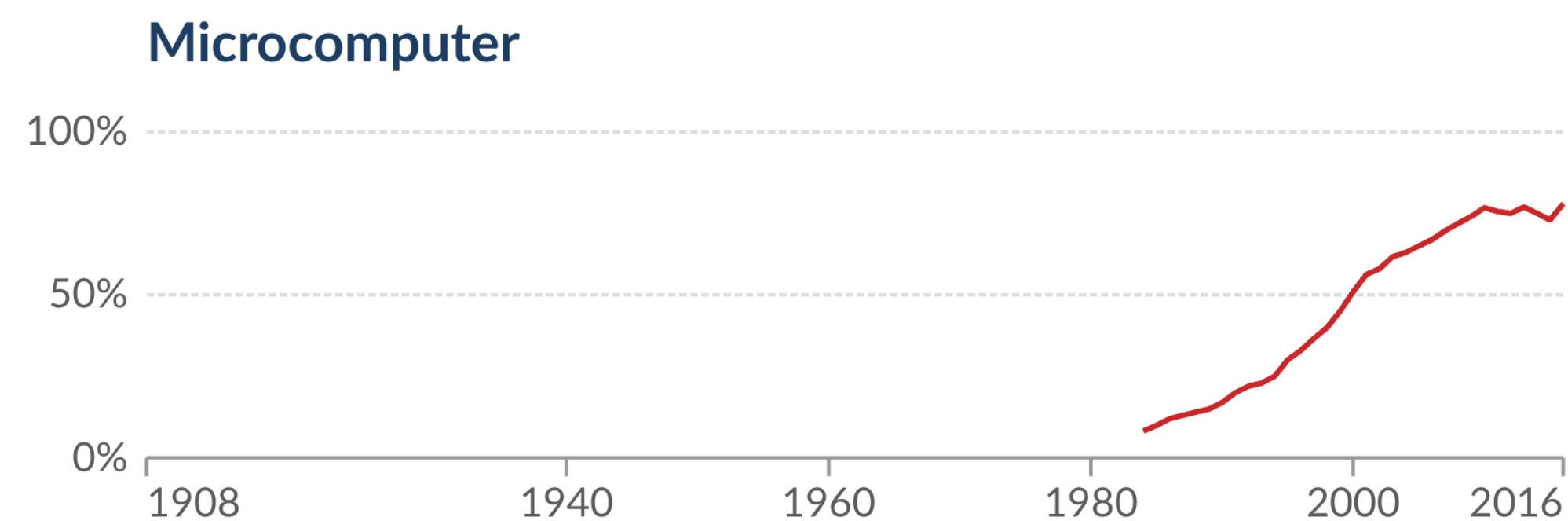
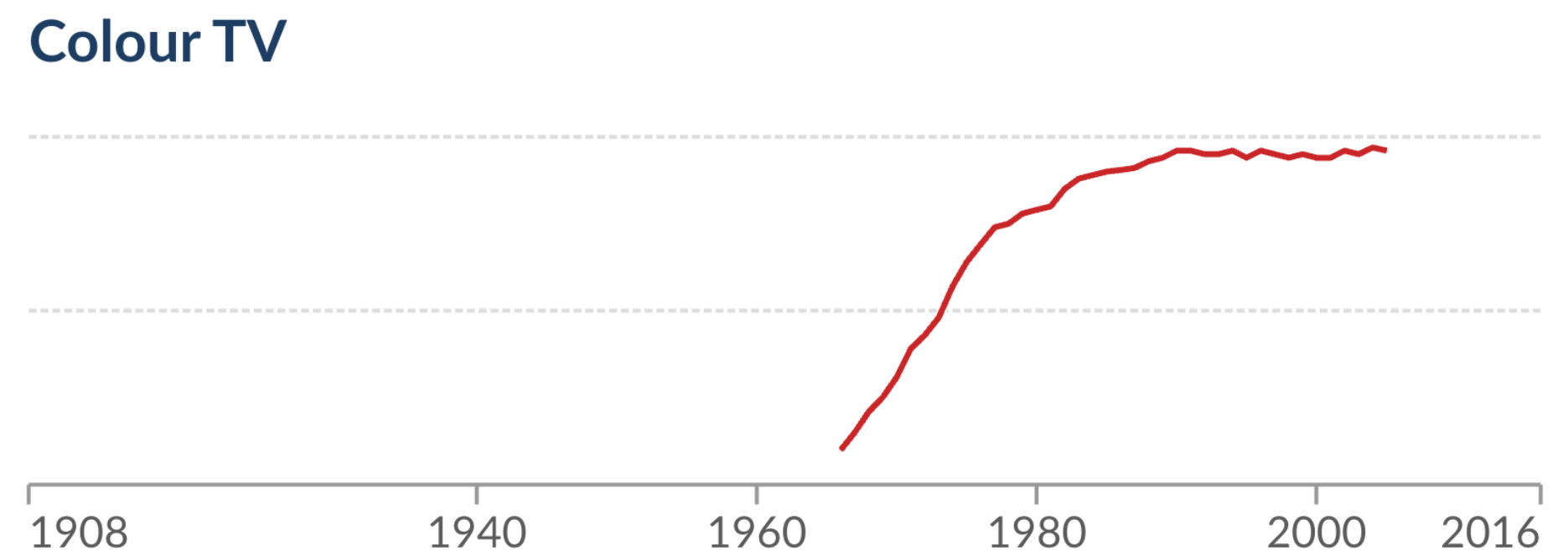
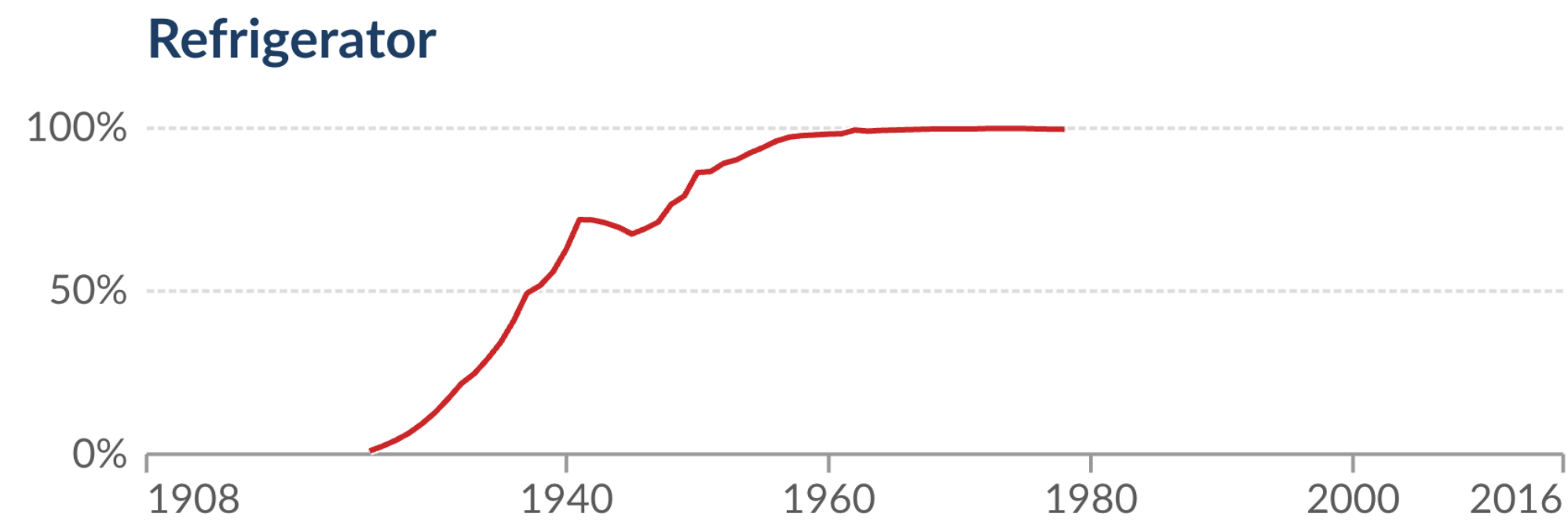
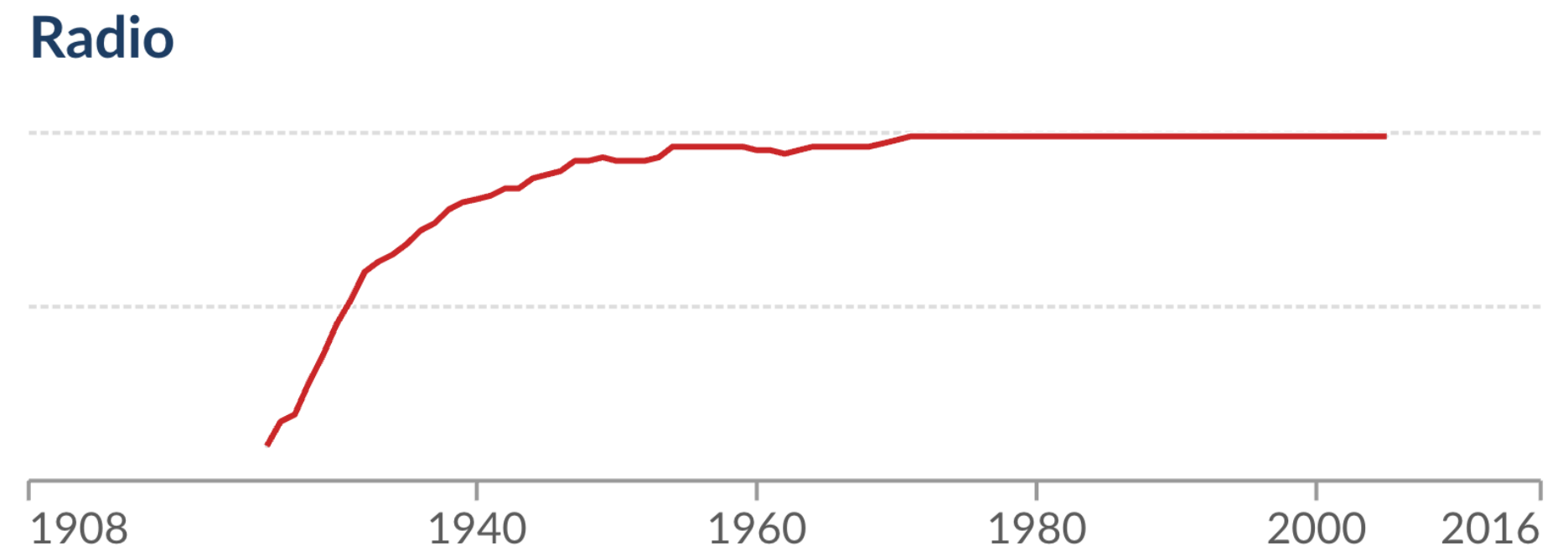
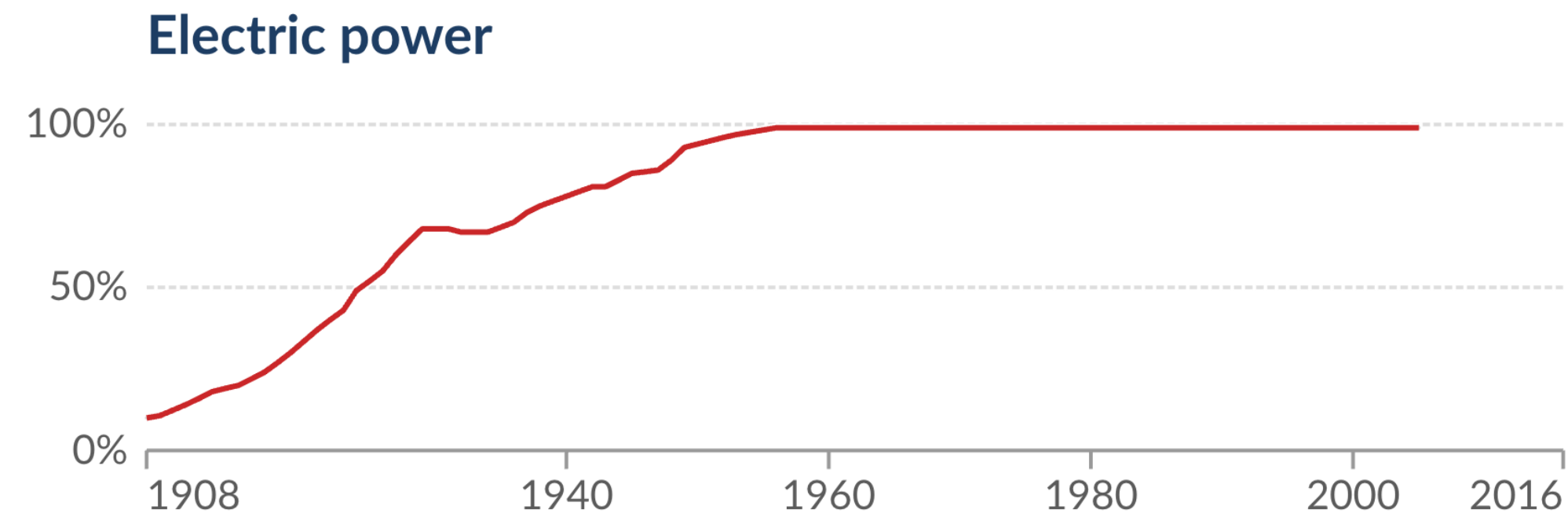


# Product Innovation



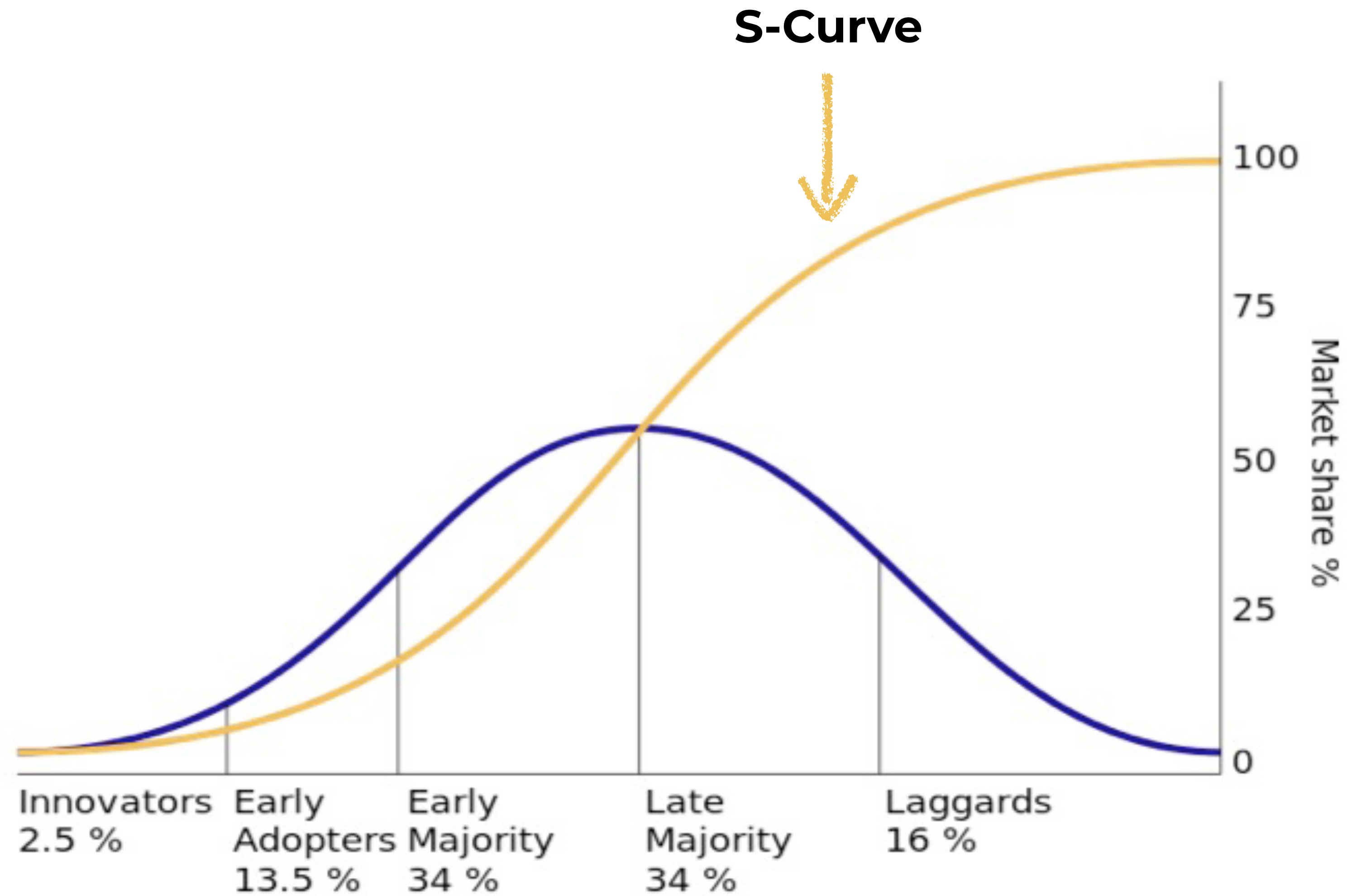
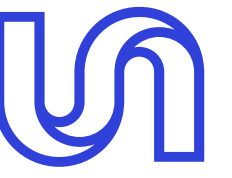


# Diffusion of Innovation



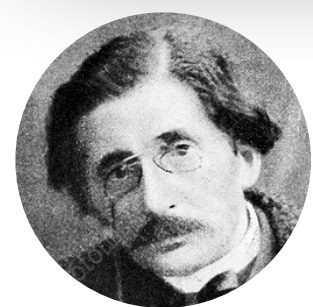
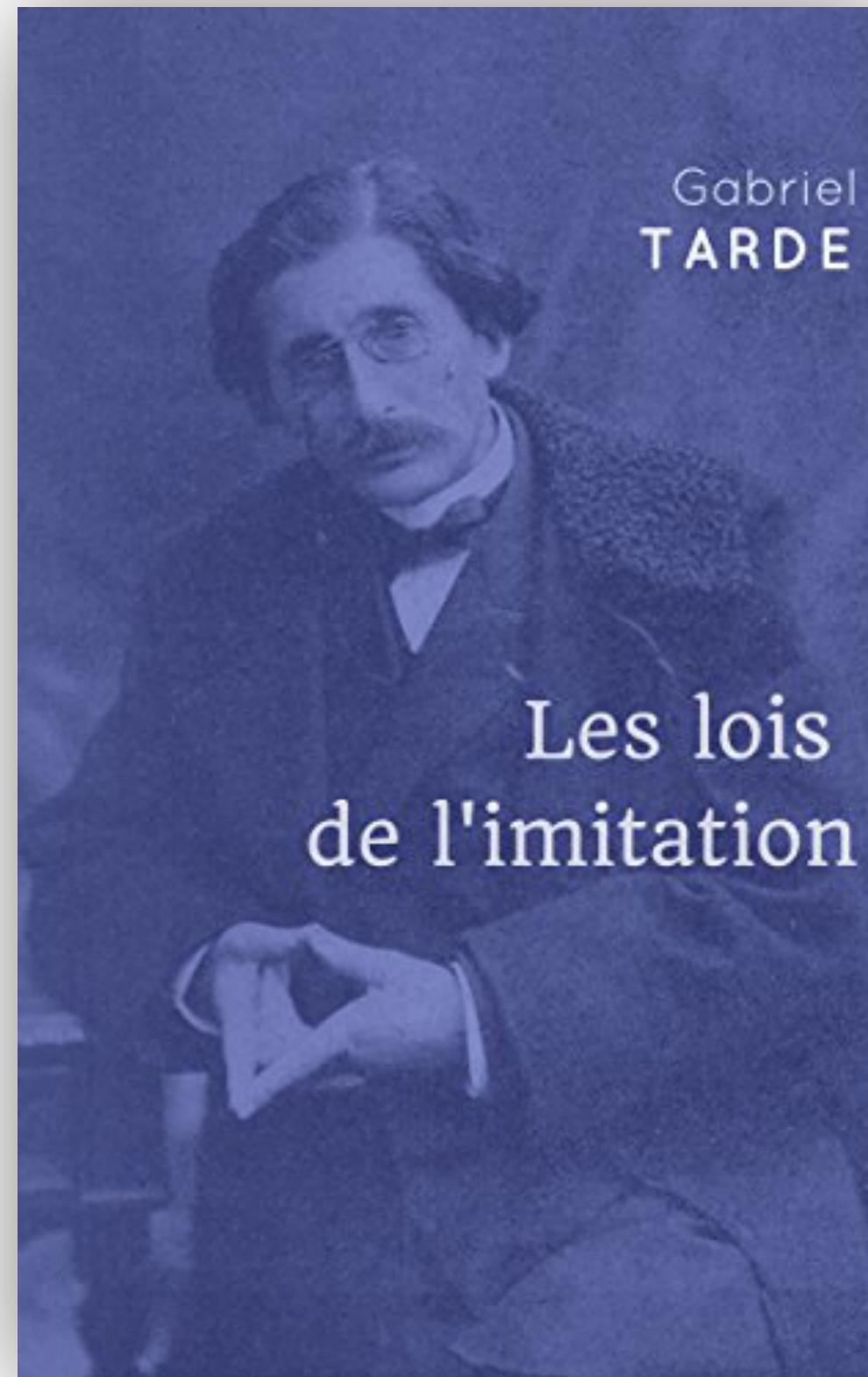
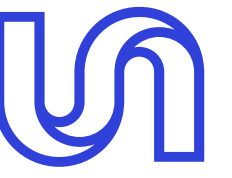


# Diffusion of Innovation Theory

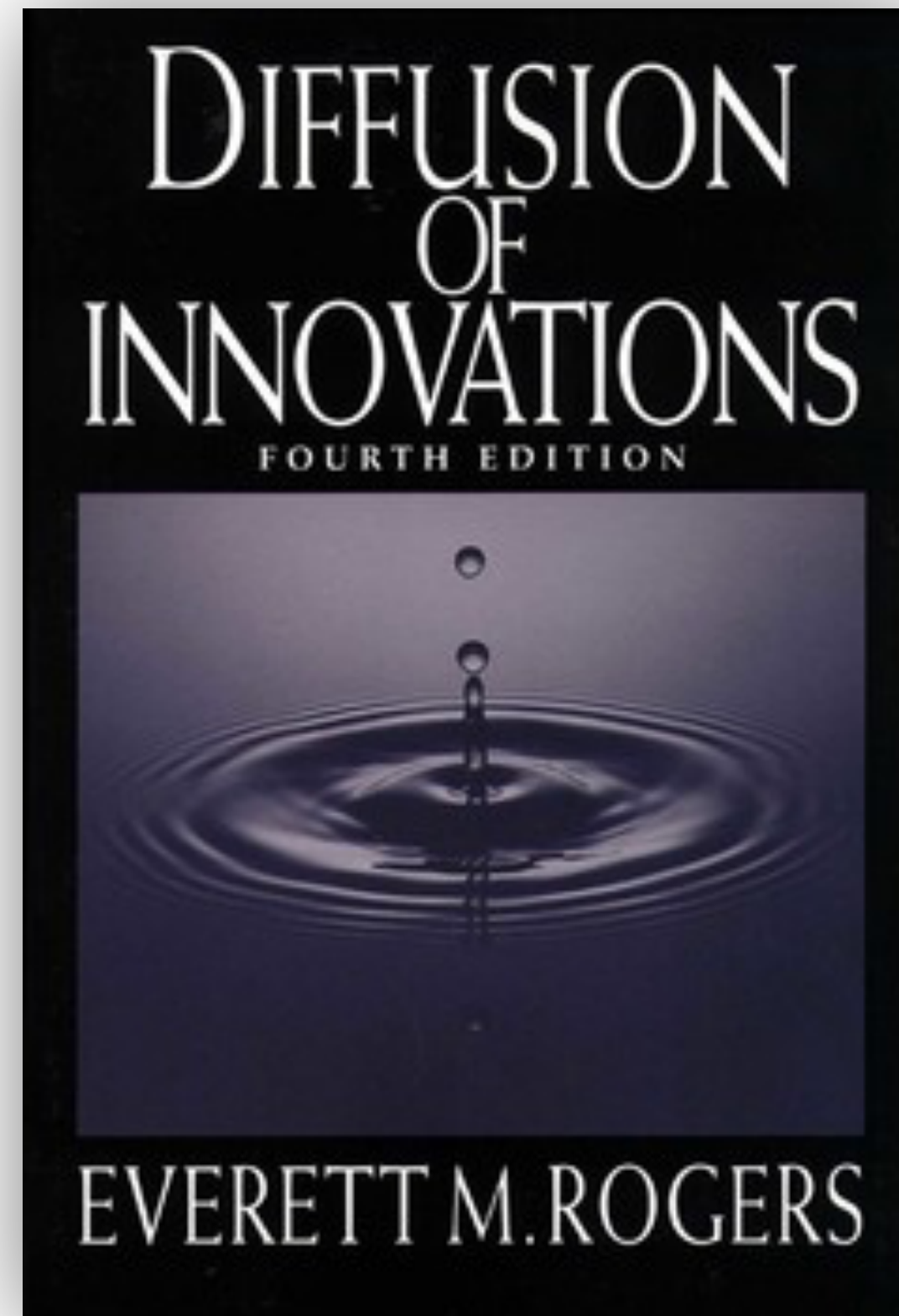




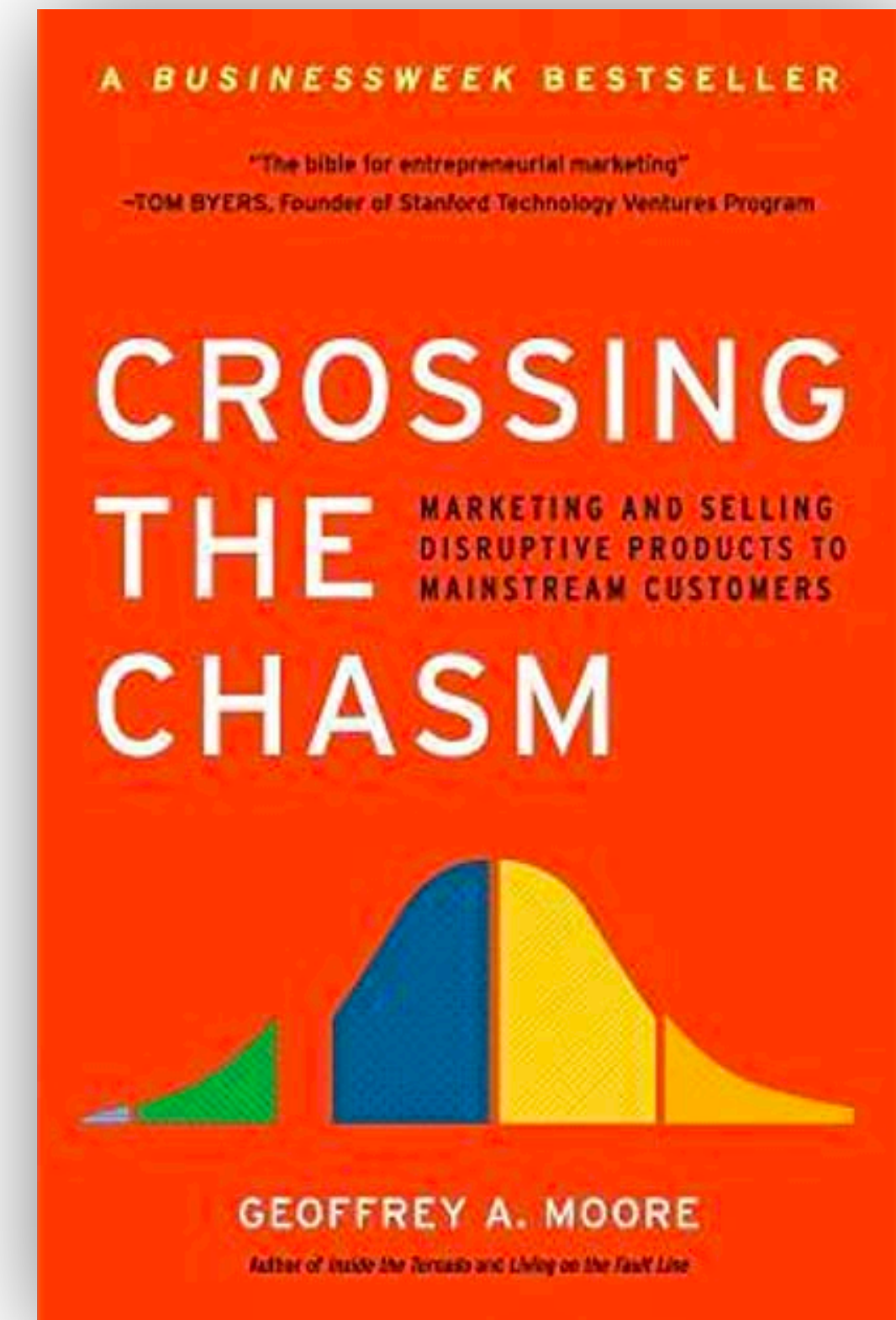
# Diffusion of Innovation Theory



Gabriel Tarde  
1903



Everett M. Rogers  
1962

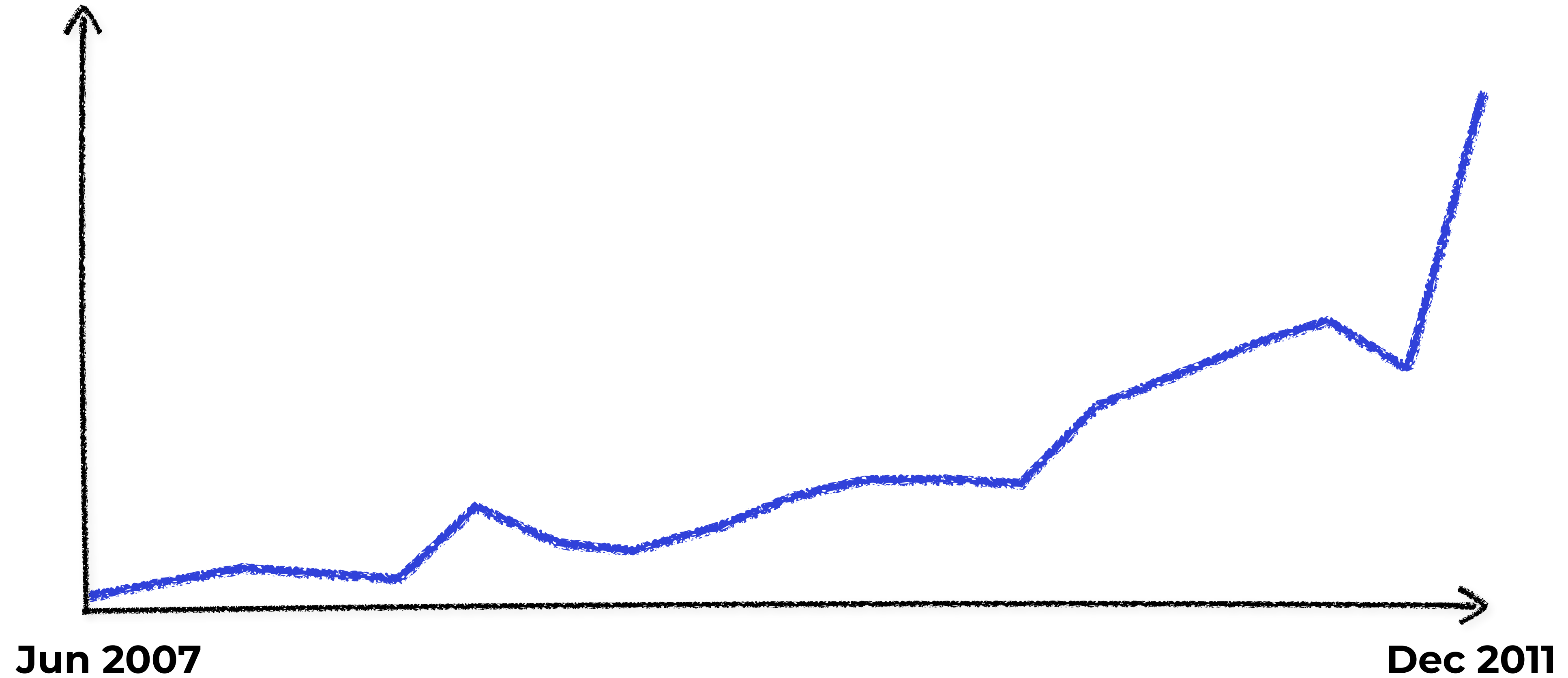


Geoffrey A. Moore  
1991



# Adoption of the Smartphone

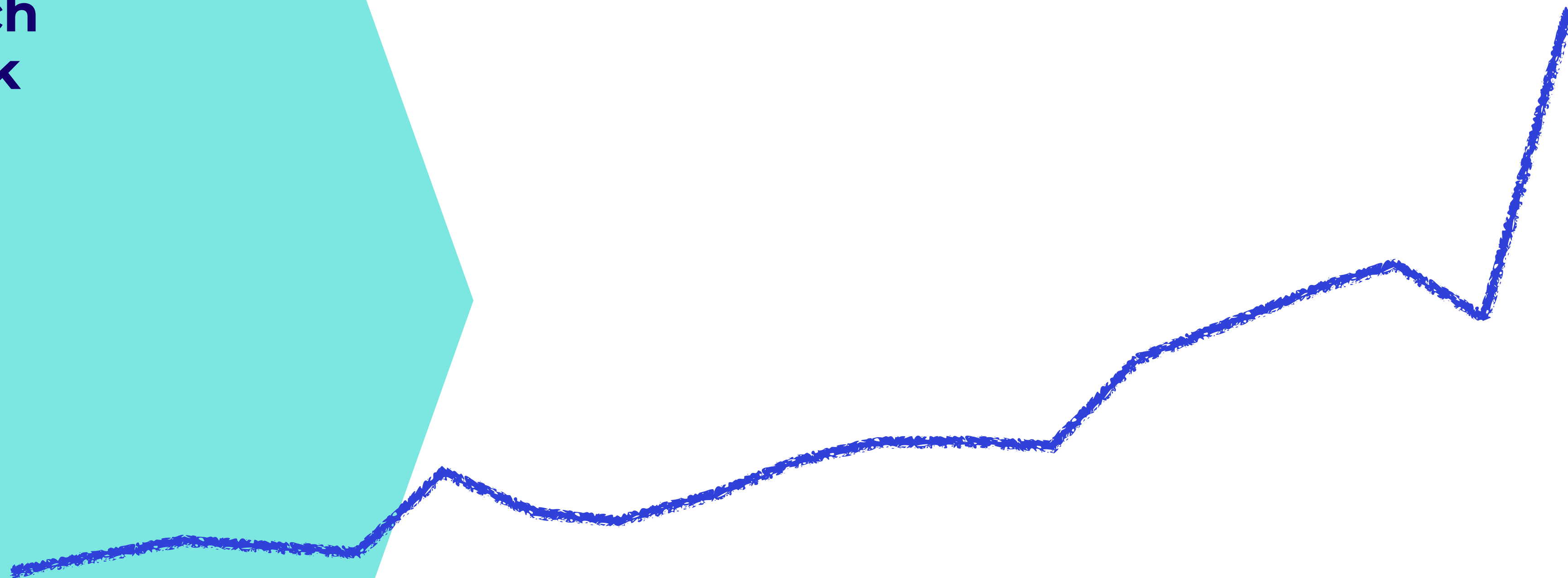
iPhones Sold





# Adoption of the Smartphone

**Get  
the tech  
to work**





# Adoption of the Smartphone

**Get  
the tech  
to work**

**Find  
product-market  
fit**





# Adoption of the Smartphone

**Get  
the tech  
to work**

**Find  
product-market  
fit**

**Exponential  
Growth**





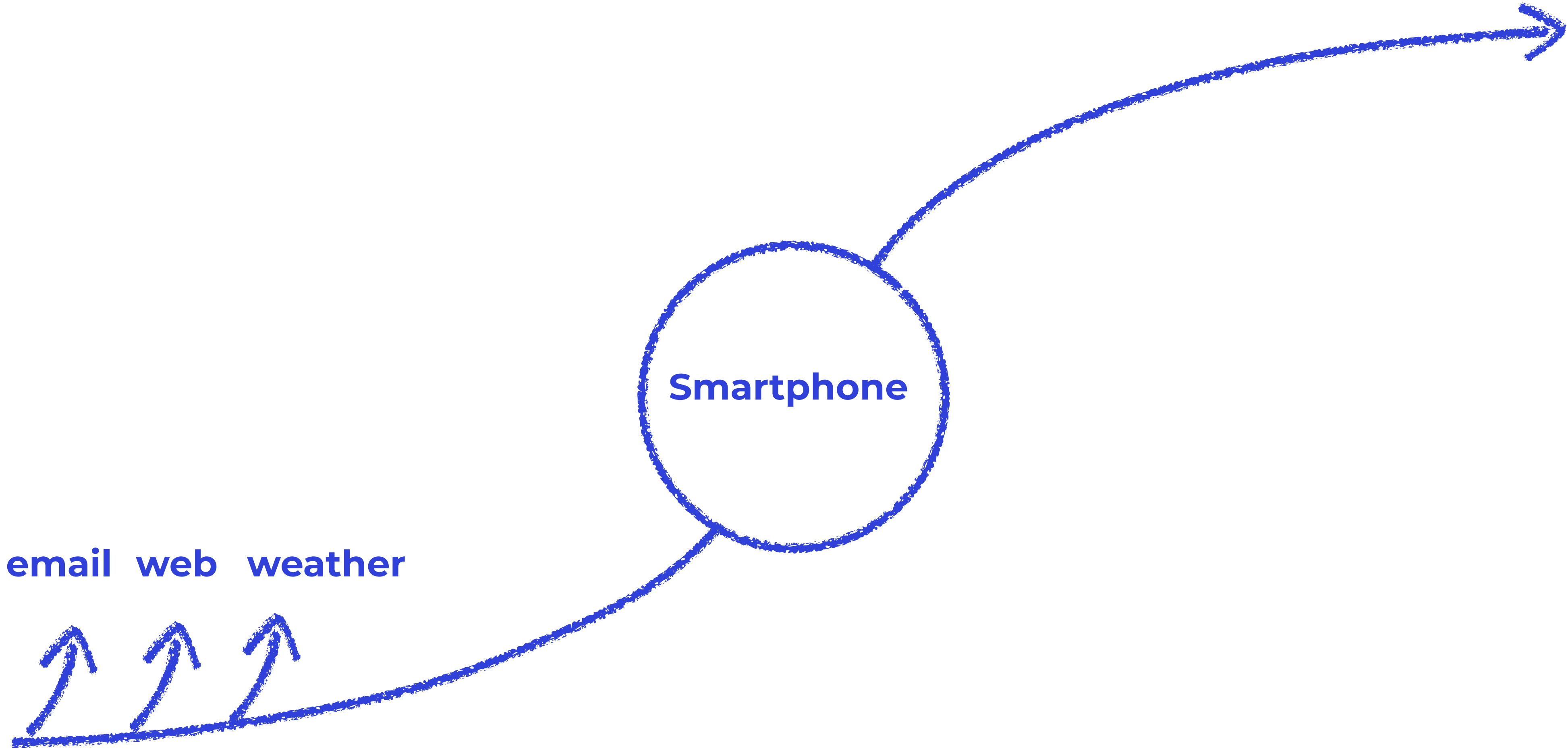
**In the beginning it's not obvious  
what you can do**





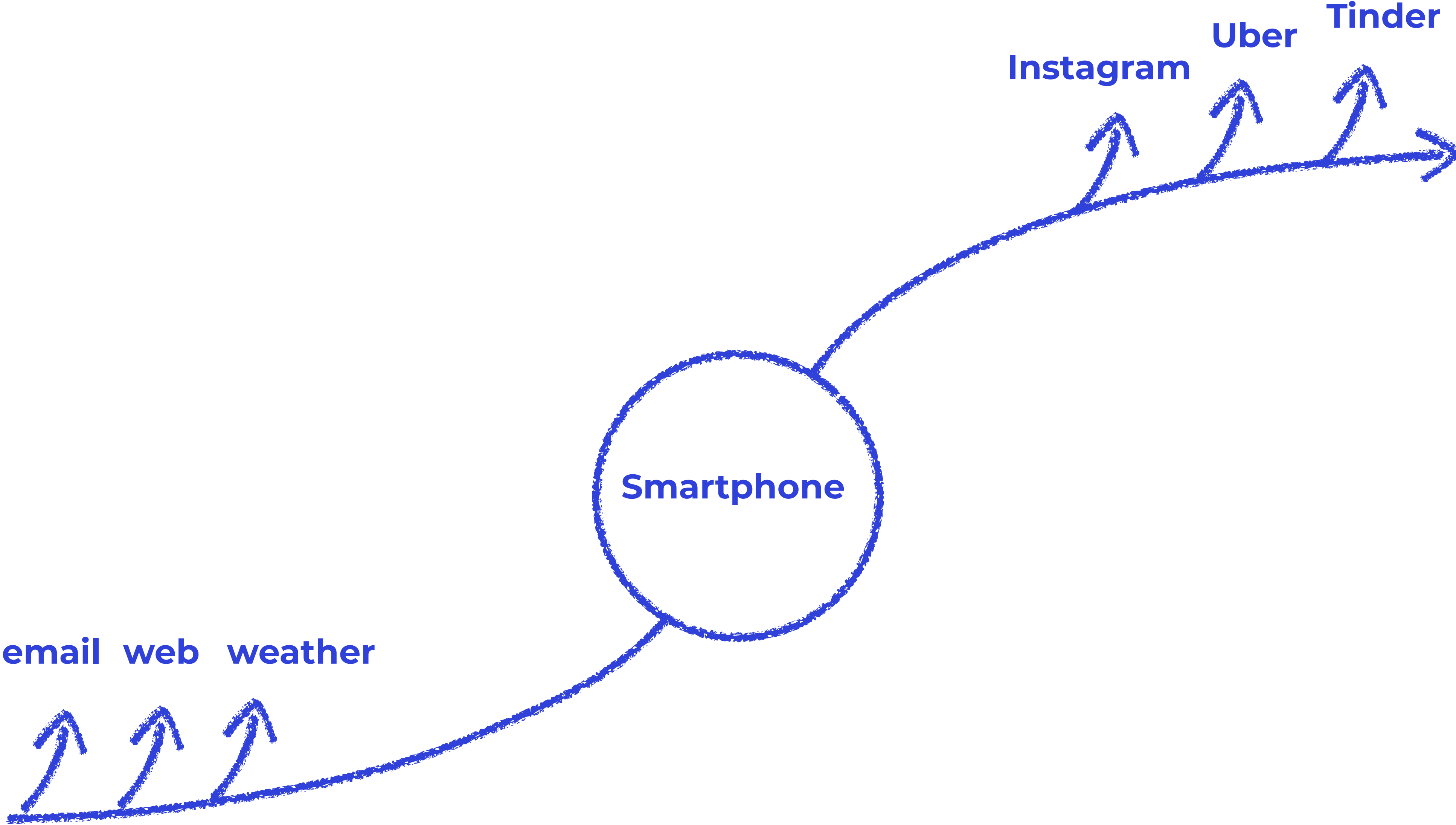


# Uses are not obvious in the beginning



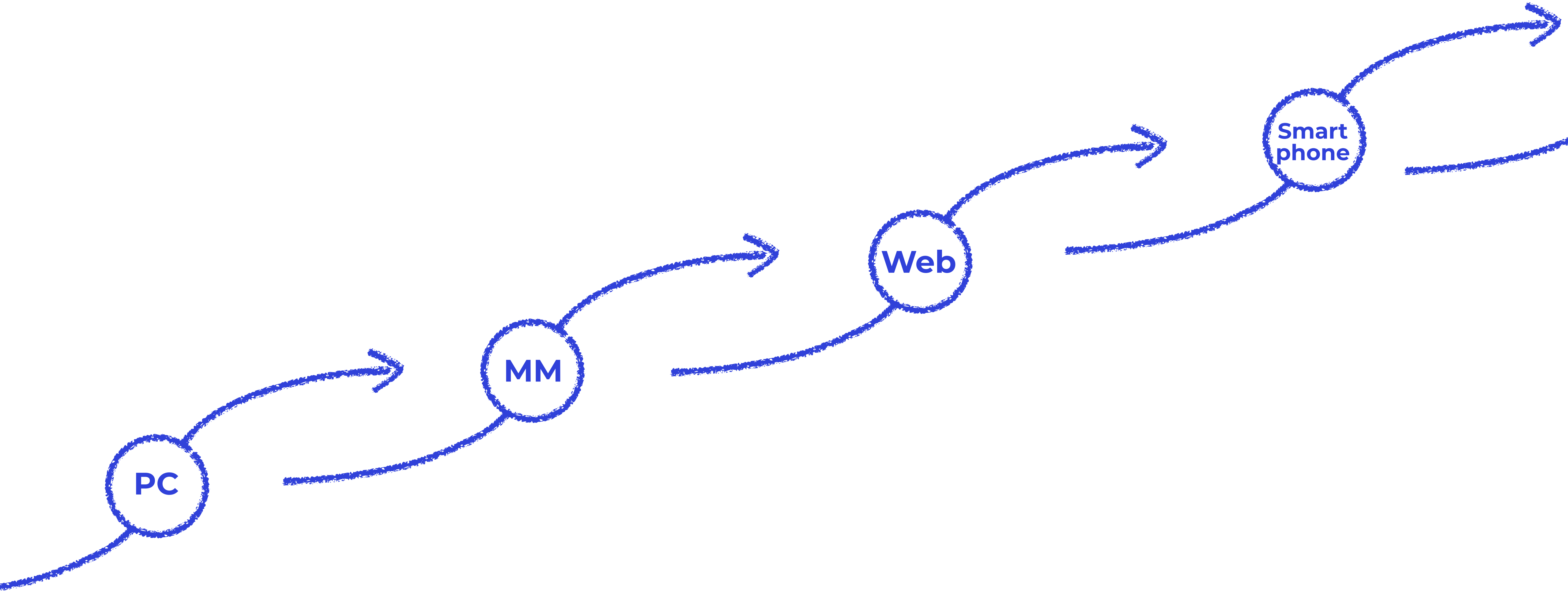


# Uses are not obvious in the beginning



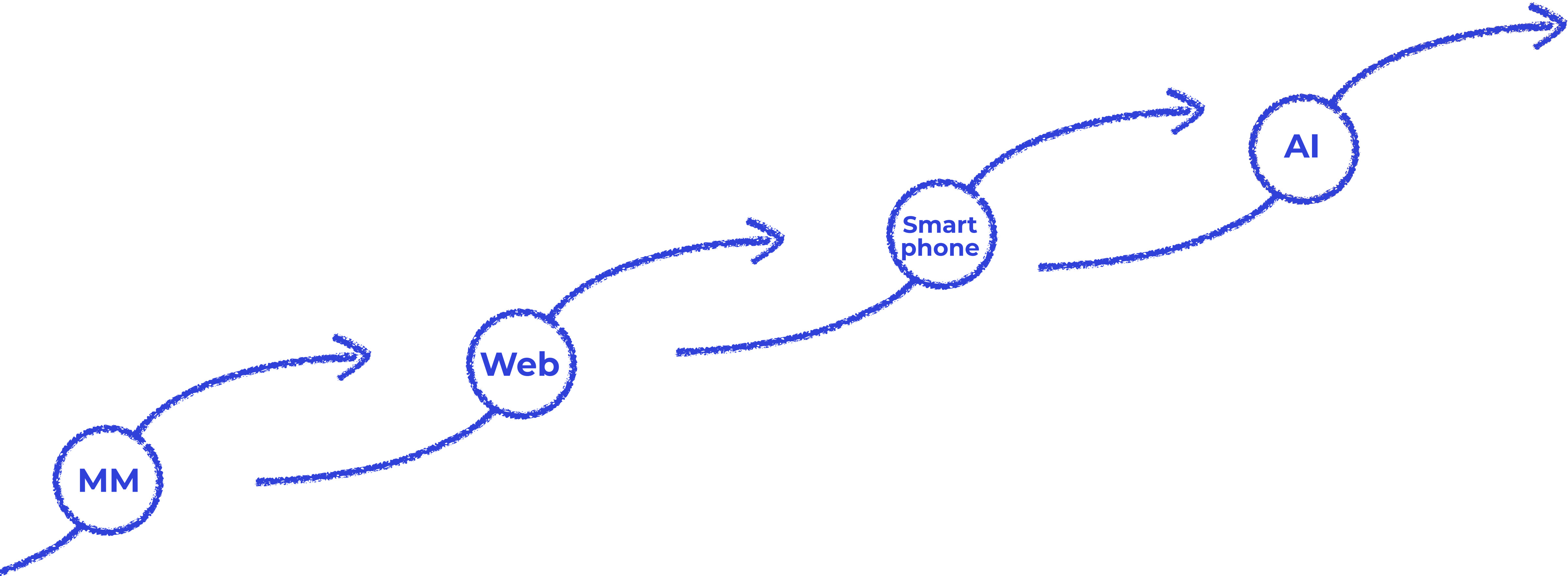


# My S-Curves



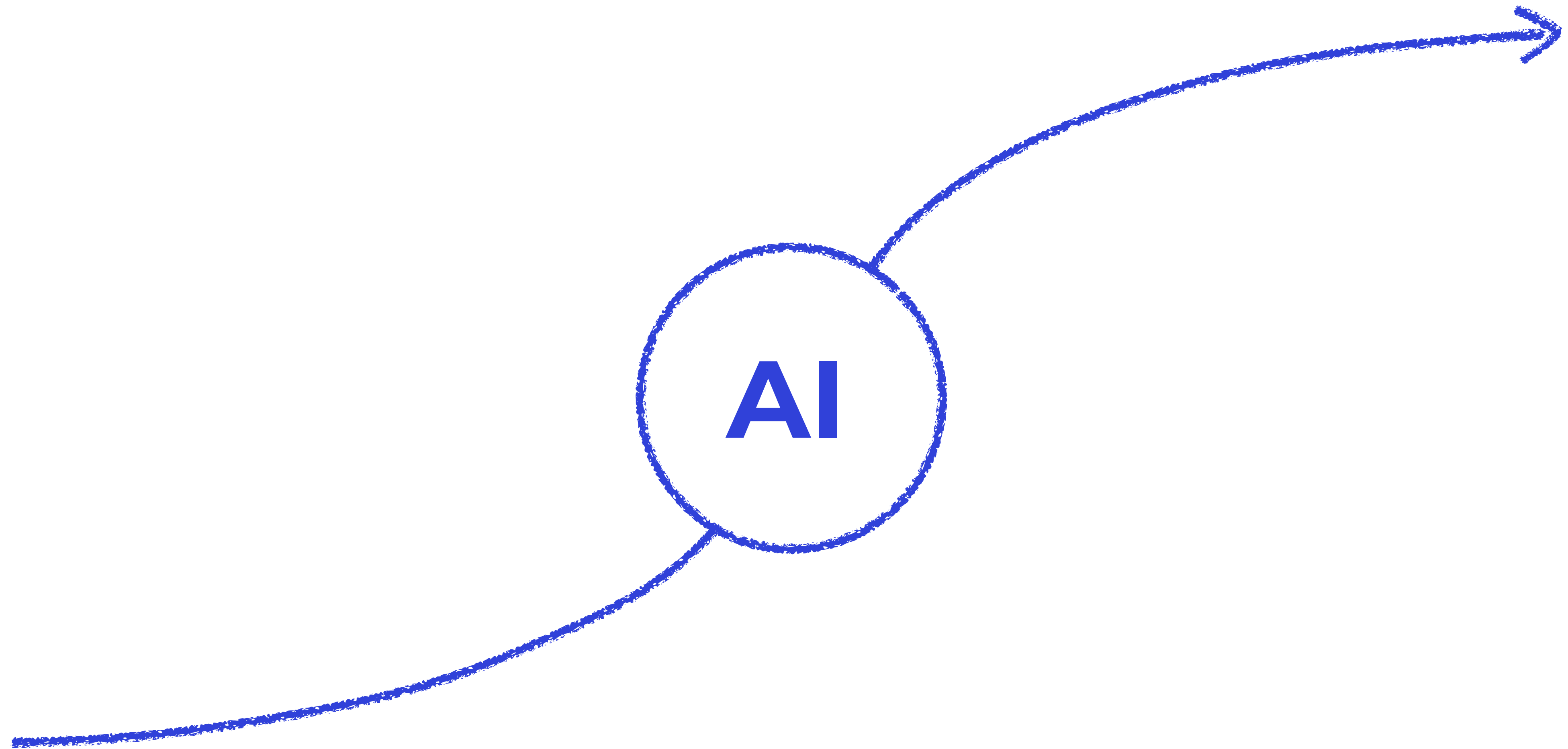


# My S-Curves





# AI S-curve

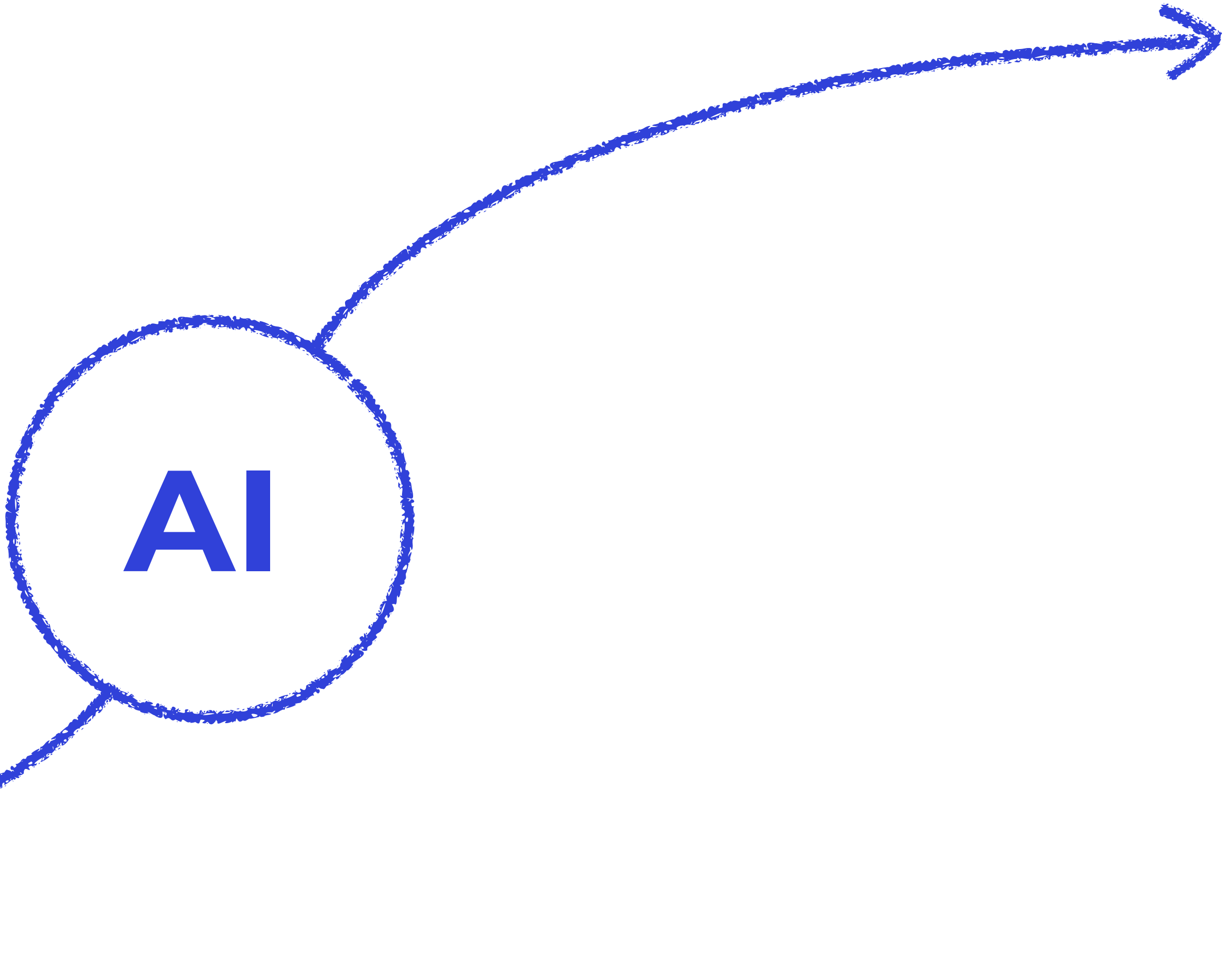




# AI S-curve



recognise cats

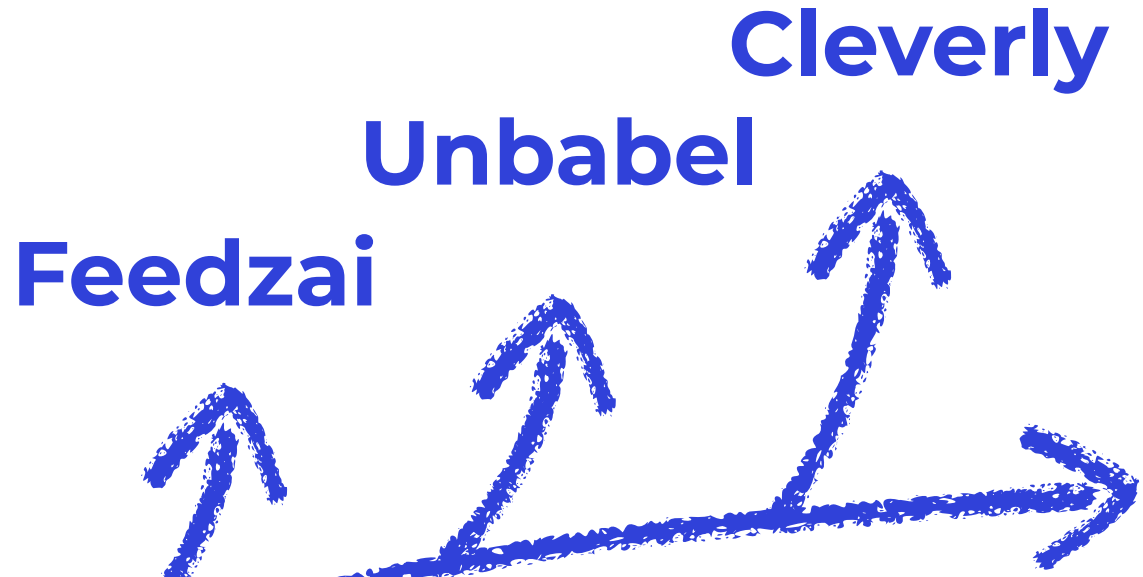
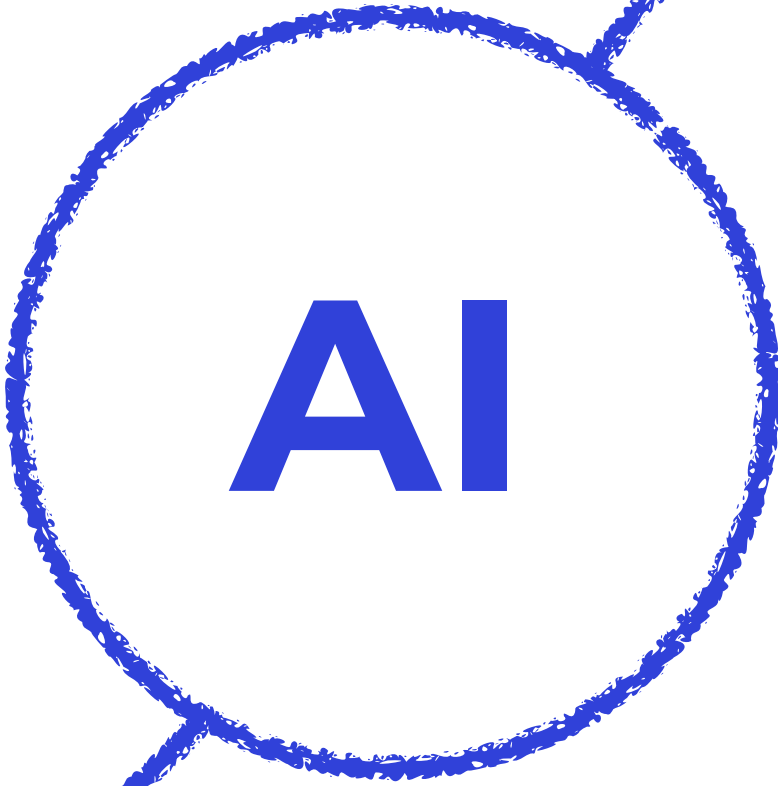




# AI S-curve



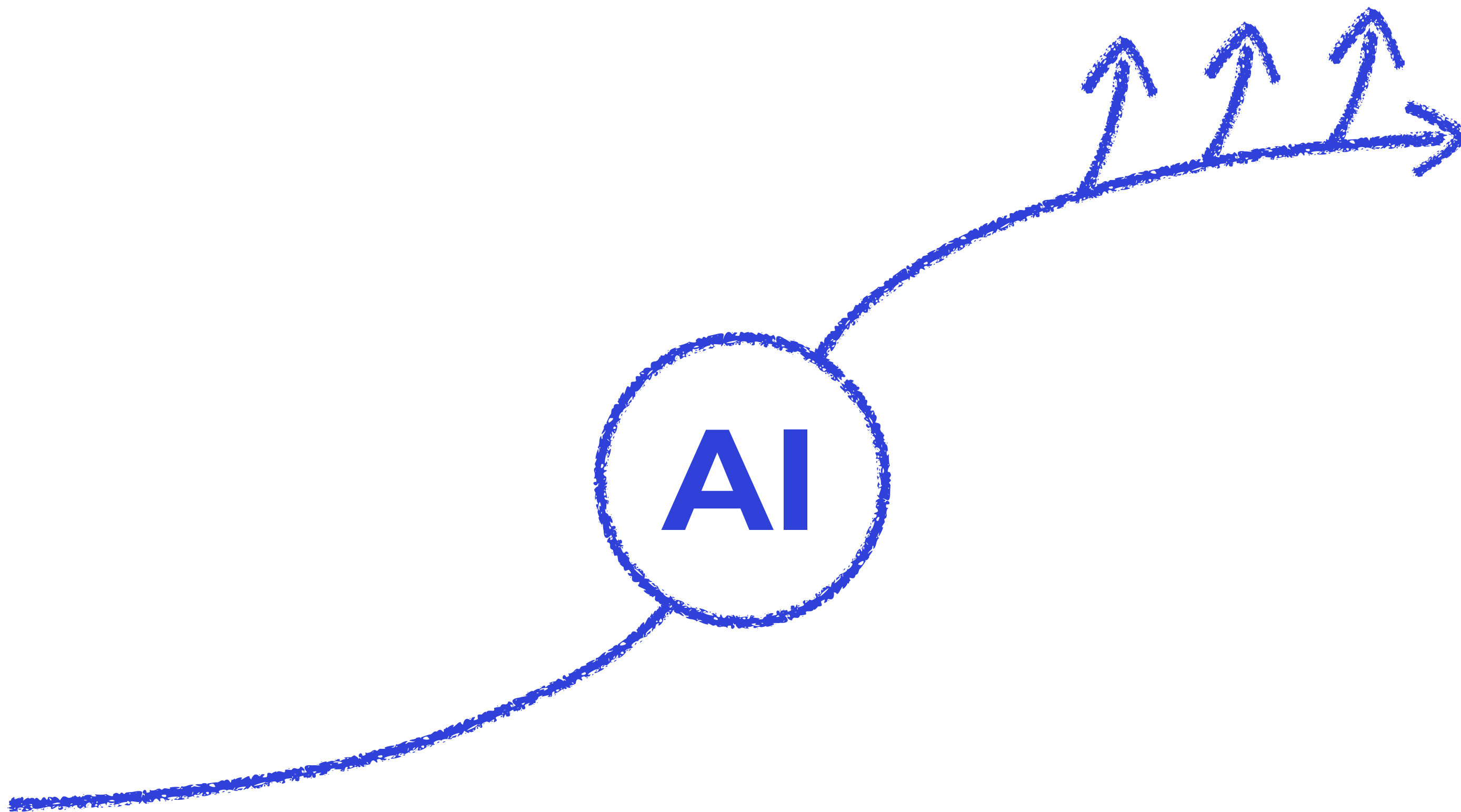
recognise cats





# Two Innovation Streams

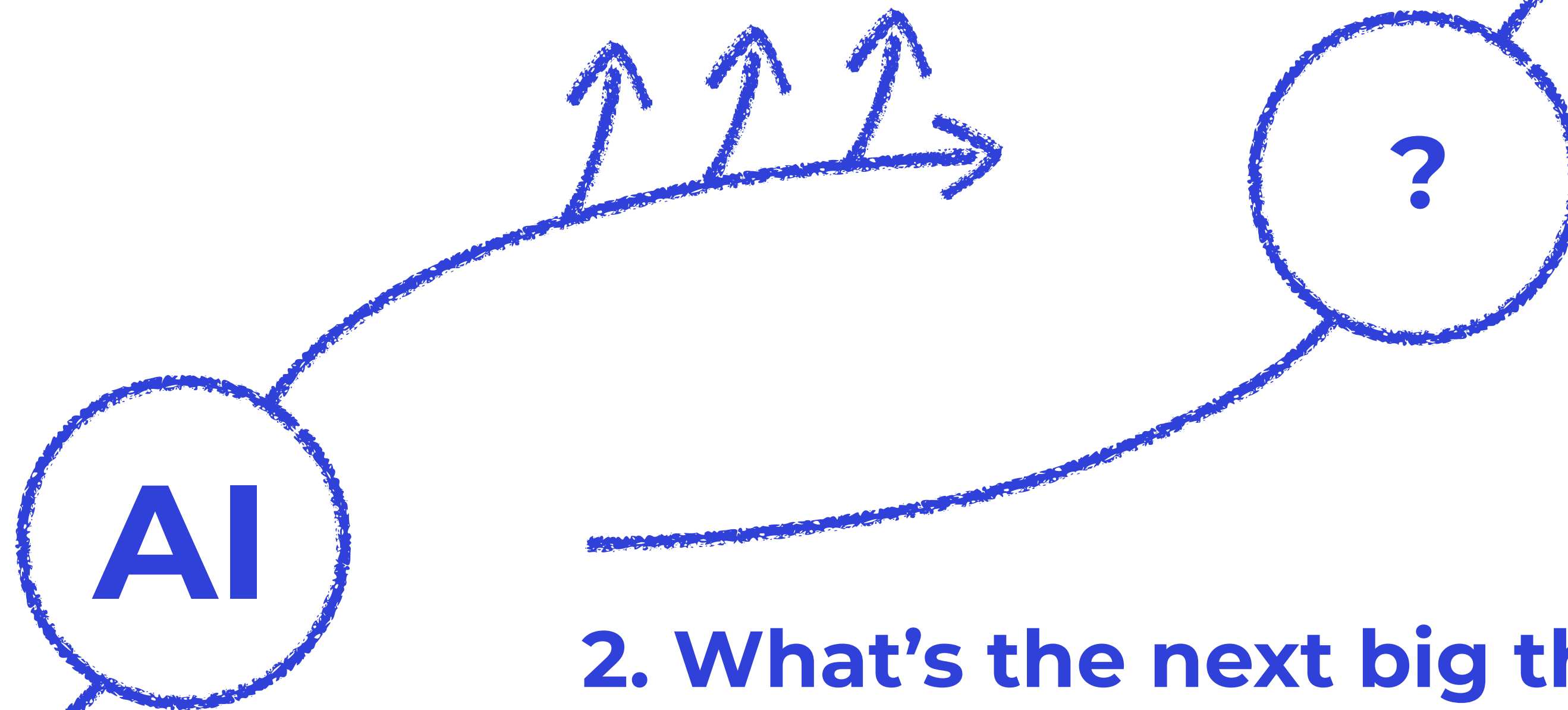
1. What should we build?





# Two Innovation Streams

1. What should we build?



2. What's the next big thing?





**What should we build now?**



# Meet the Unbabel Labs Team



Empowered

Cross-  
Functional

Co-located

With  
Superpowers



# Unbabel Labs Superpowers





# Unbabel Labs Superpowers





Unbabel Labs Superpowers

AI First

Stretch  
OKRs

Customer  
Discovery  
Programs

Ai

Jobs  
To Be  
Done





# The Unbabel Chat story



# Superpower #1: AI-First

## **Unbabel's Participation in the WMT16 Word-Level Translation Quality Estimation Shared Task**

**André F. T. Martins**

Unbabel & Instituto de Telecomunicações

Lisbon, Portugal

andre.martins@unbabel.com

**Ramón Astudillo**

Unbabel & L2F/INESC-ID

Lisbon, Portugal

ramon@unbabel.com

**Chris Hokamp**

Dublin City University

Dublin, Ireland

chokamp@computing.dcu.ie

**Fabio N. Kepler**

L2F/INESC-ID, Lisbon, Portugal

University of Pampa, Alegrete, Brazil

fabio@kepler.pro.br



# Superpower #1: AI-First

UNBABEL-ENSEMBLE, a stacked combination of the linear system with three different deep neural networks, mixing feed-forward, convolutional, and recurrent lay-

ers. Our systems achieved  $F_1^{\text{OK}} \times F_1^{\text{BAD}}$  scores of 46.29% and 49.52%, respectively, which were the two highest scores in the challenge.

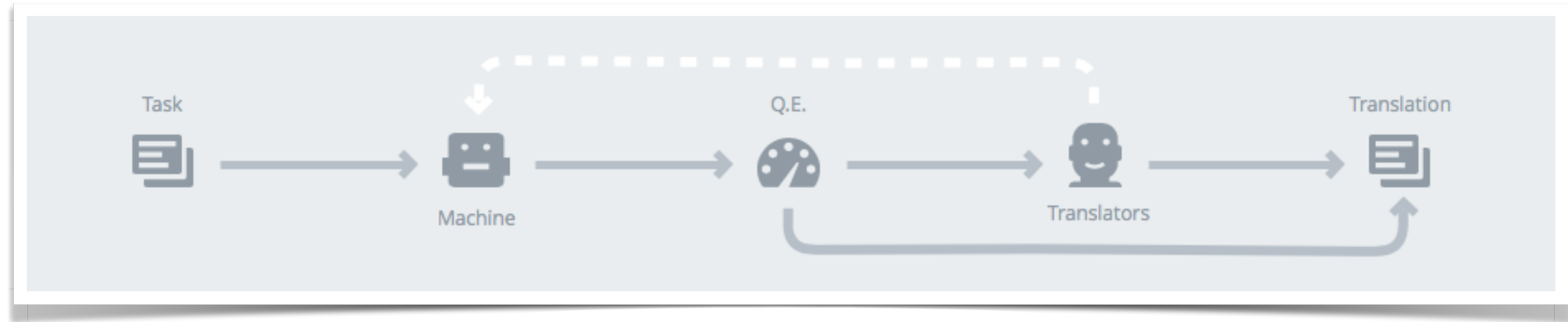


# ACL WMT '19 Competition Winner

|   | <b>Participant</b> | <b>Run</b> | <b>Pearson ▼</b> | <b>Spearman</b> |
|---|--------------------|------------|------------------|-----------------|
| 1 | UNBABEL            | Ensemble 2 | 0.5923           | 0.5388          |
| 2 | UNBABEL            | Ensemble   | 0.5889           | 0.5411          |
| 3 | ETRI               |            | 0.5327           | 0.5222          |
| 4 | CMULTIMLT          | 1          | 0.4575           | 0.4039          |
| 5 | CMULTIMLT          | 2          | 0.4292           | 0.3628          |



# Superpower #1: AI-First



**“The best single source of innovation are your engineers.”**

— Marty Cagan



# Superpower #2: Stretch OKRs

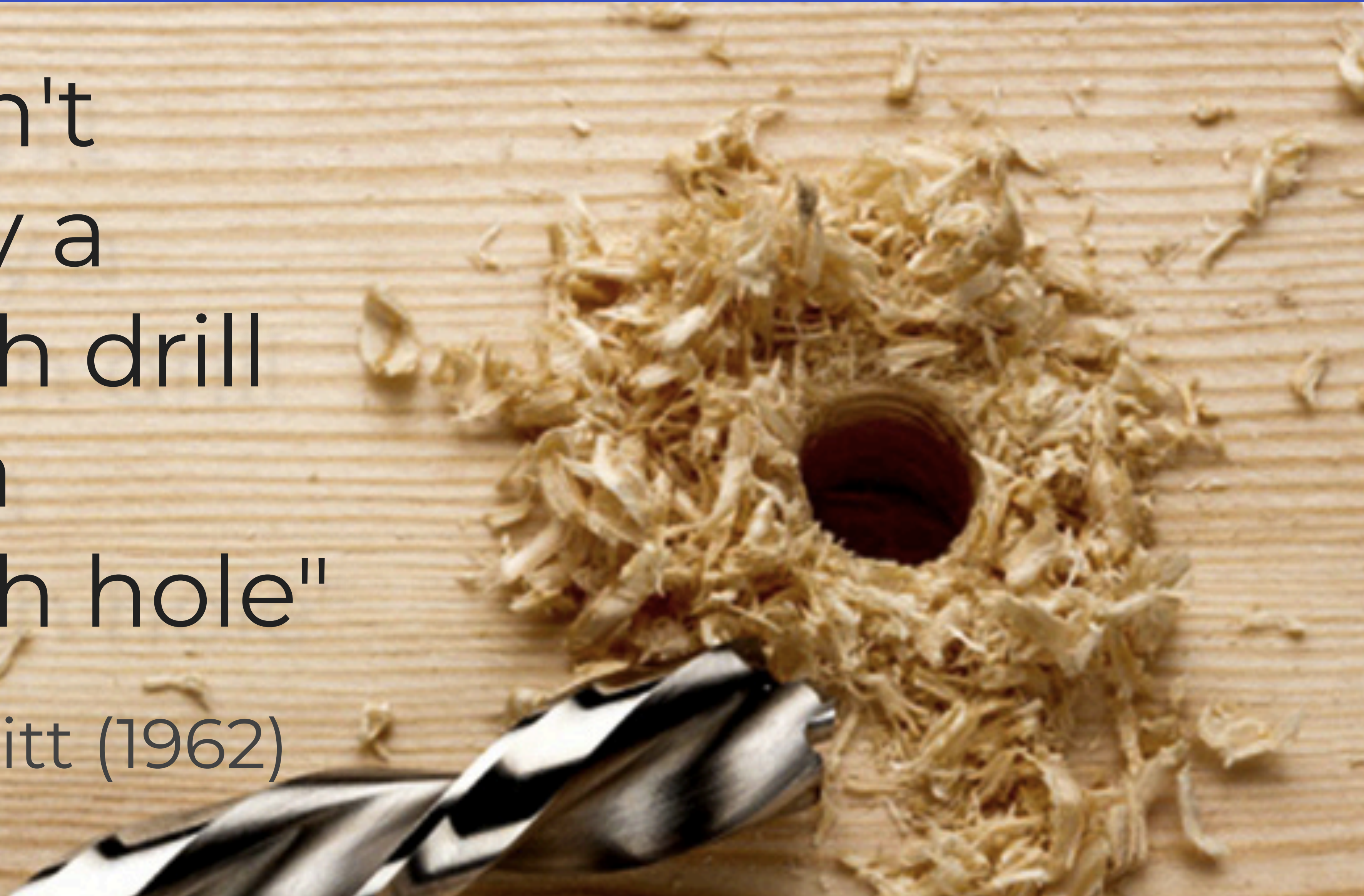
10X, not 10%



# Superpower #3: Jobs To Be Done

"People don't want to buy a quarter-inch drill they want a quarter-inch hole"

— Theodore Levitt (1962)





# Superpower #4: Customer Discovery Programs

Product Risks



**VALUE**



# Superpower #4: Customer Discovery Programs

Product Risks



**VALUE**



**USABILITY**



# Superpower #4: Customer Discovery Programs

Product Risks



**VALUE**



**USABILITY**



**FEASIBILITY**



# Superpower #4: Customer Discovery Programs

Product Risks

**VALUE**

**USABILITY**

**FEASIBILITY**

**VIABILITY**



# Superpower #4: Customer Discovery Programs

Product Risks

VALUE

USABILITY

FEASIBILITY

VIABILITY

 **myfitnesspal**

**THEHUTGROUP**<sup>®</sup>

**easyJet**

**3-5** reference customers



Unbabel Labs Superpowers

AI First

Stretch  
OKRs

Customer  
Discovery  
Programs

Ai

Jobs  
To Be  
Done



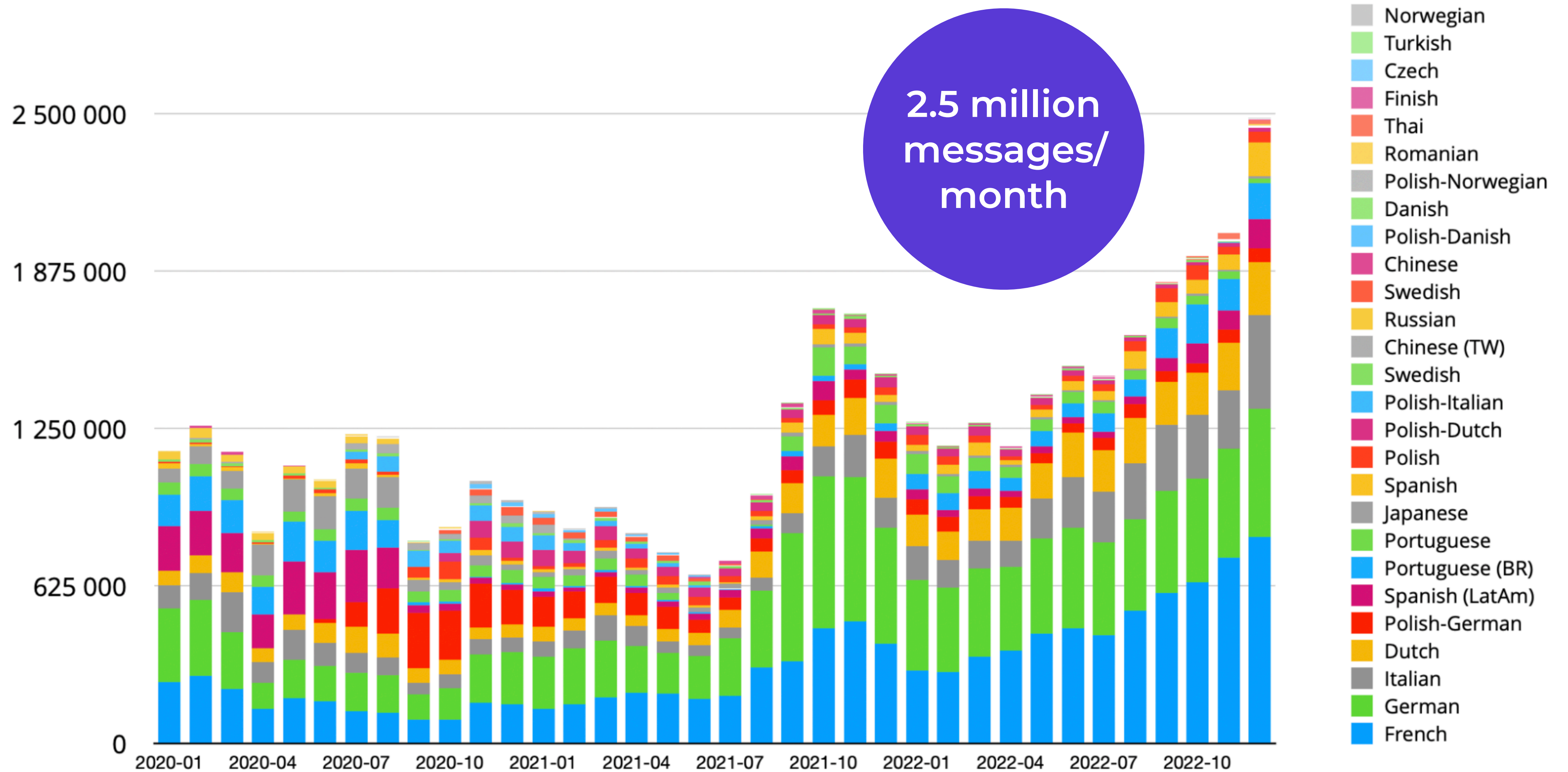


# Chat Product Timeline





# Evolution of Chat Usage





# Some familiar logos using Unbabel Chat



easyJet



PayPal





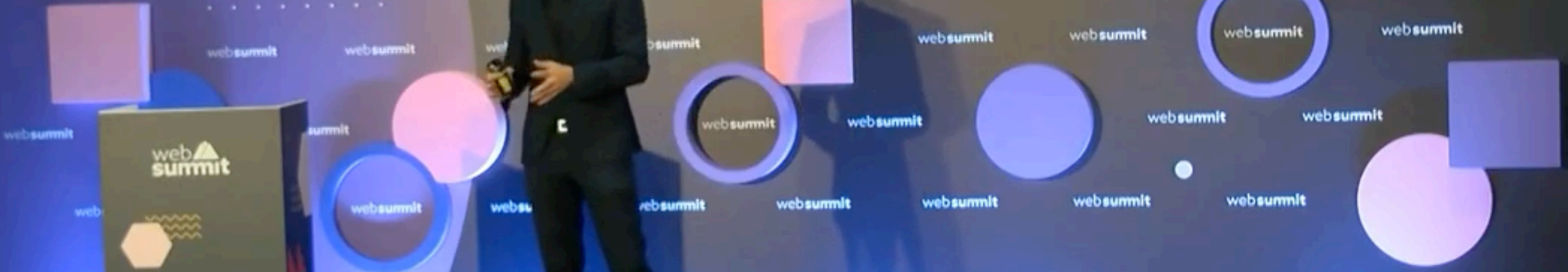
web summit



web summit

web summit

web summit



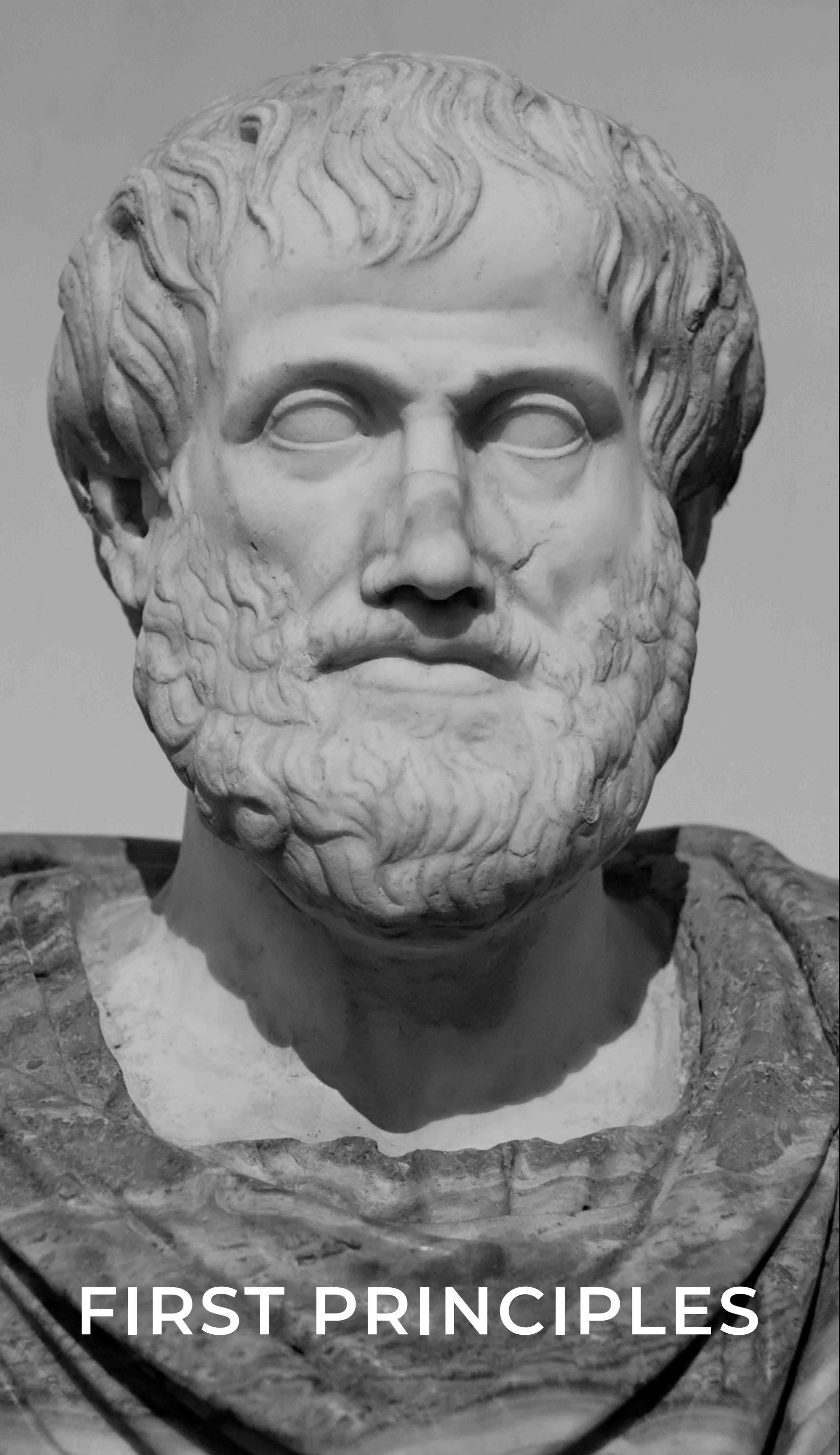


**One last thing about teams...**



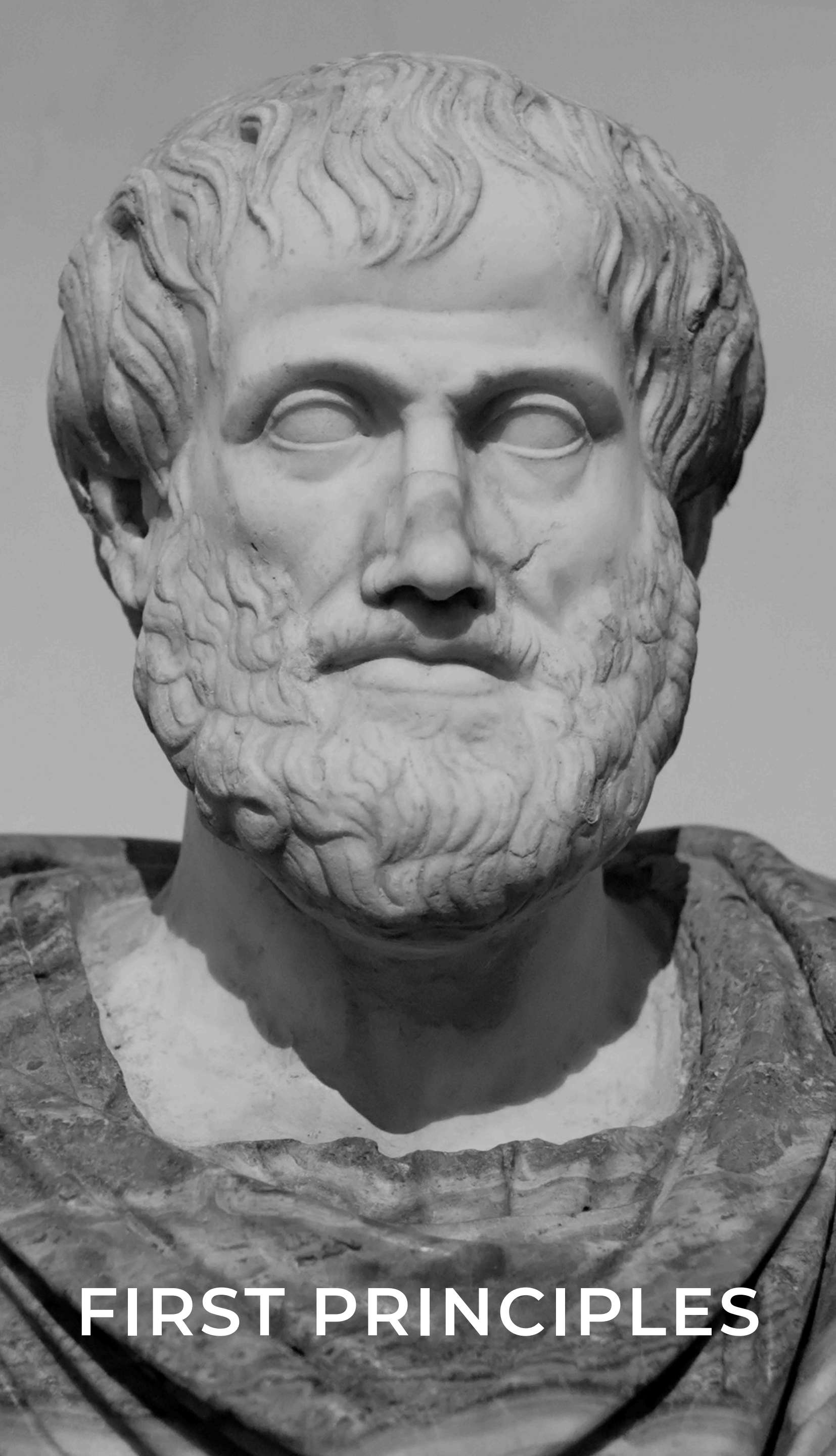
# Labs Team Principles



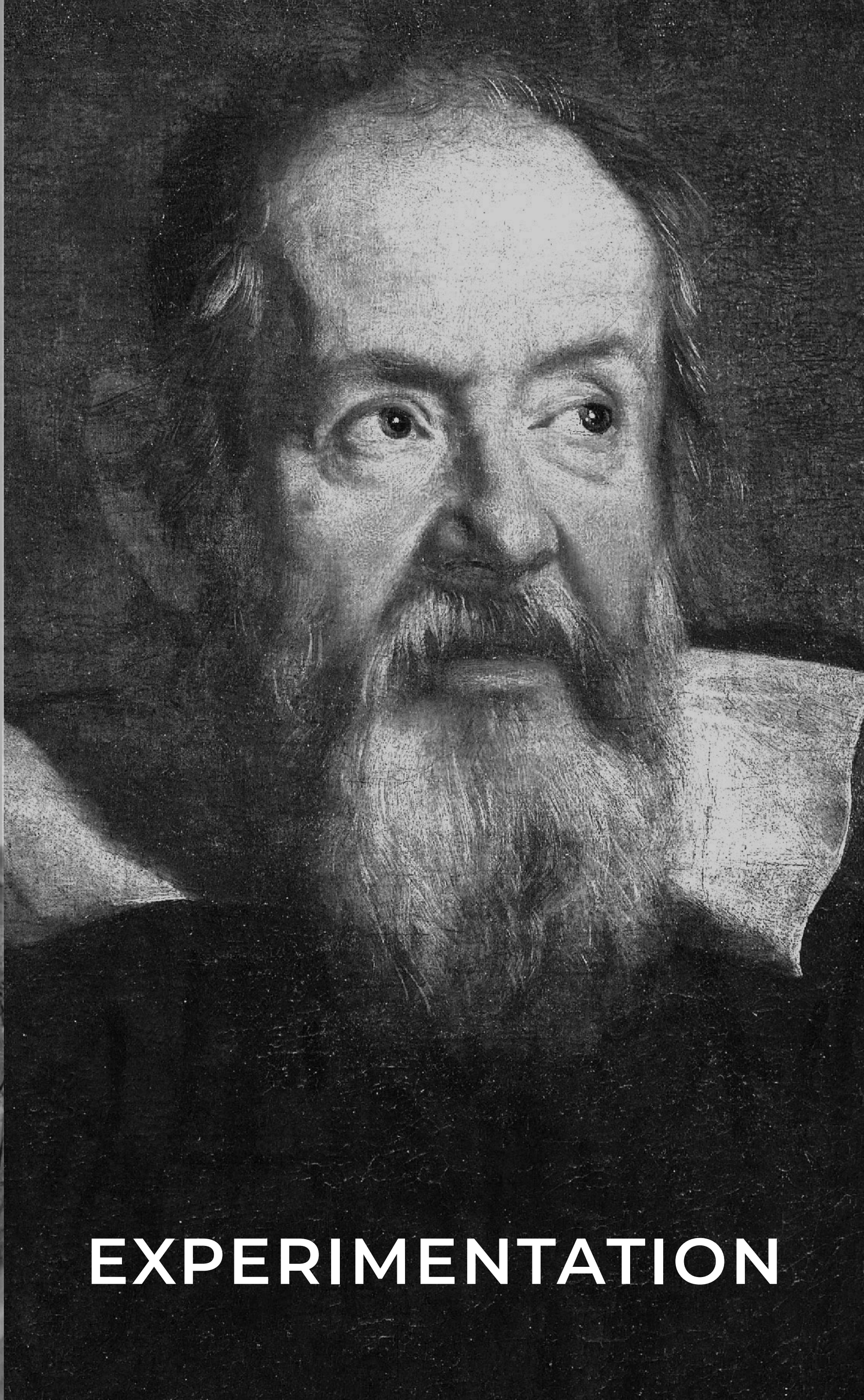


**FIRST PRINCIPLES**



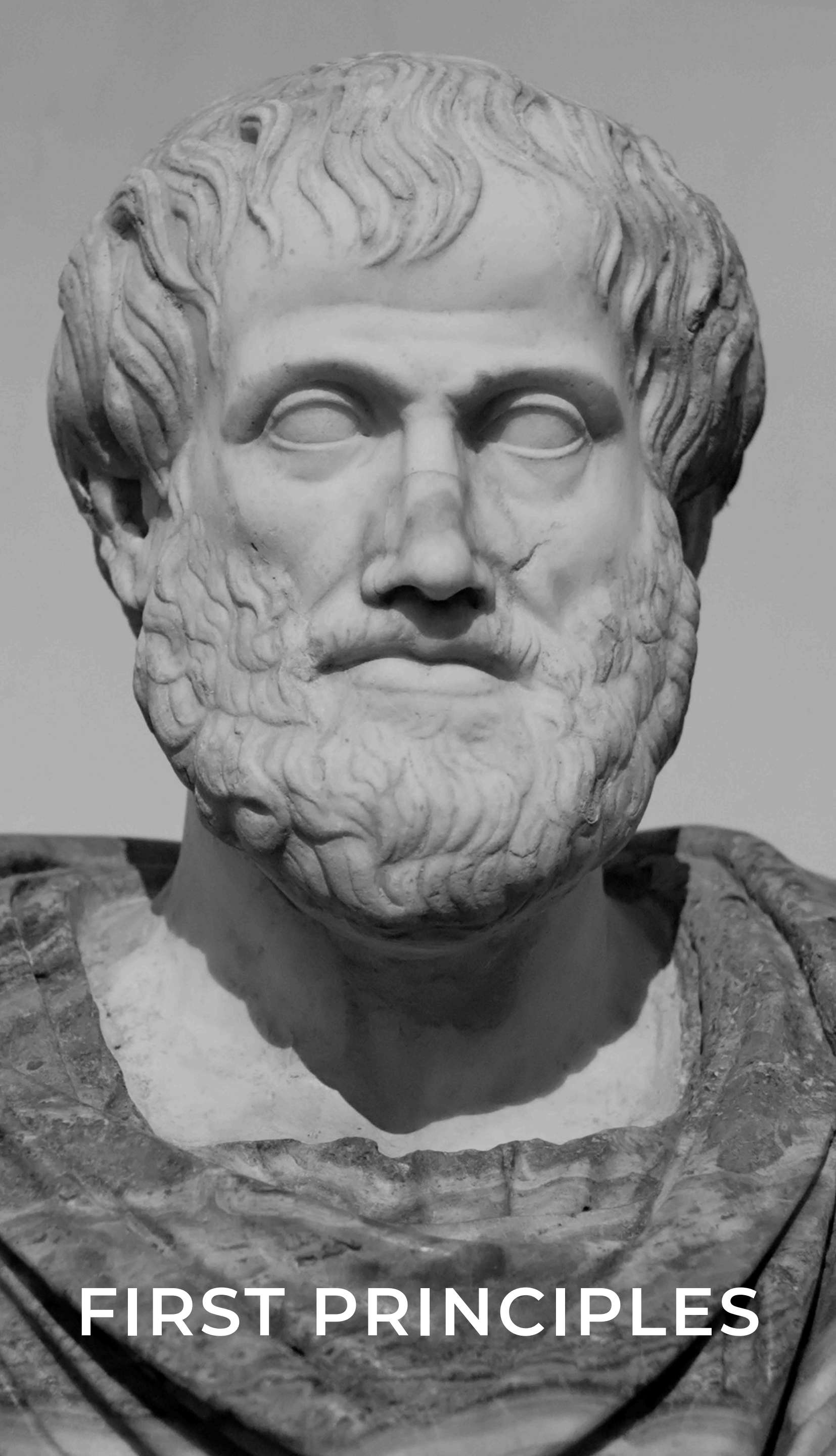


**FIRST PRINCIPLES**



**EXPERIMENTATION**





**FIRST PRINCIPLES**



**EXPERIMENTATION**



**REBEL SPIRIT**



**The *story* of innovation  
has not changed.**



“It has always been a small team of people who have a new idea, typically not understood by people around them and their executives.”

— Eric Schmidt (ex-Google CEO)

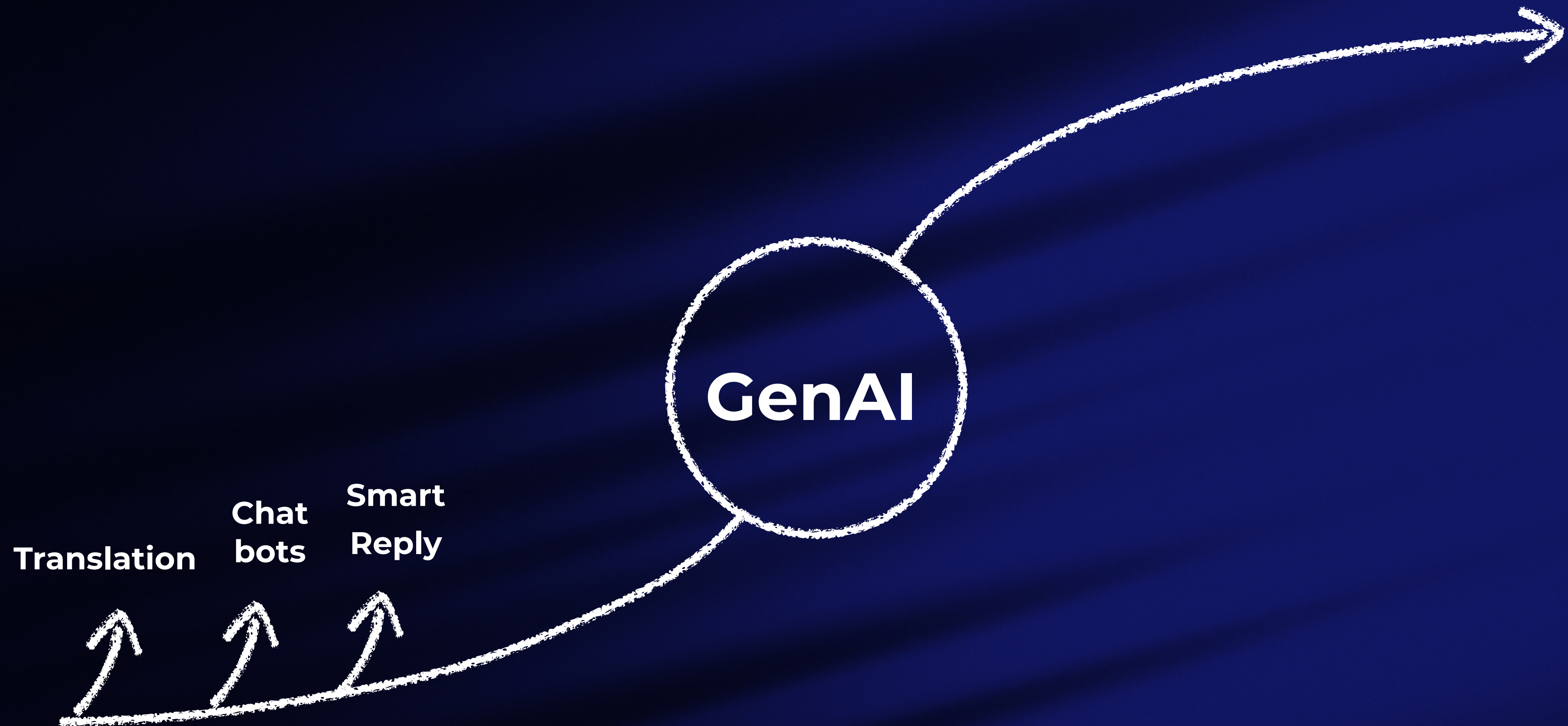




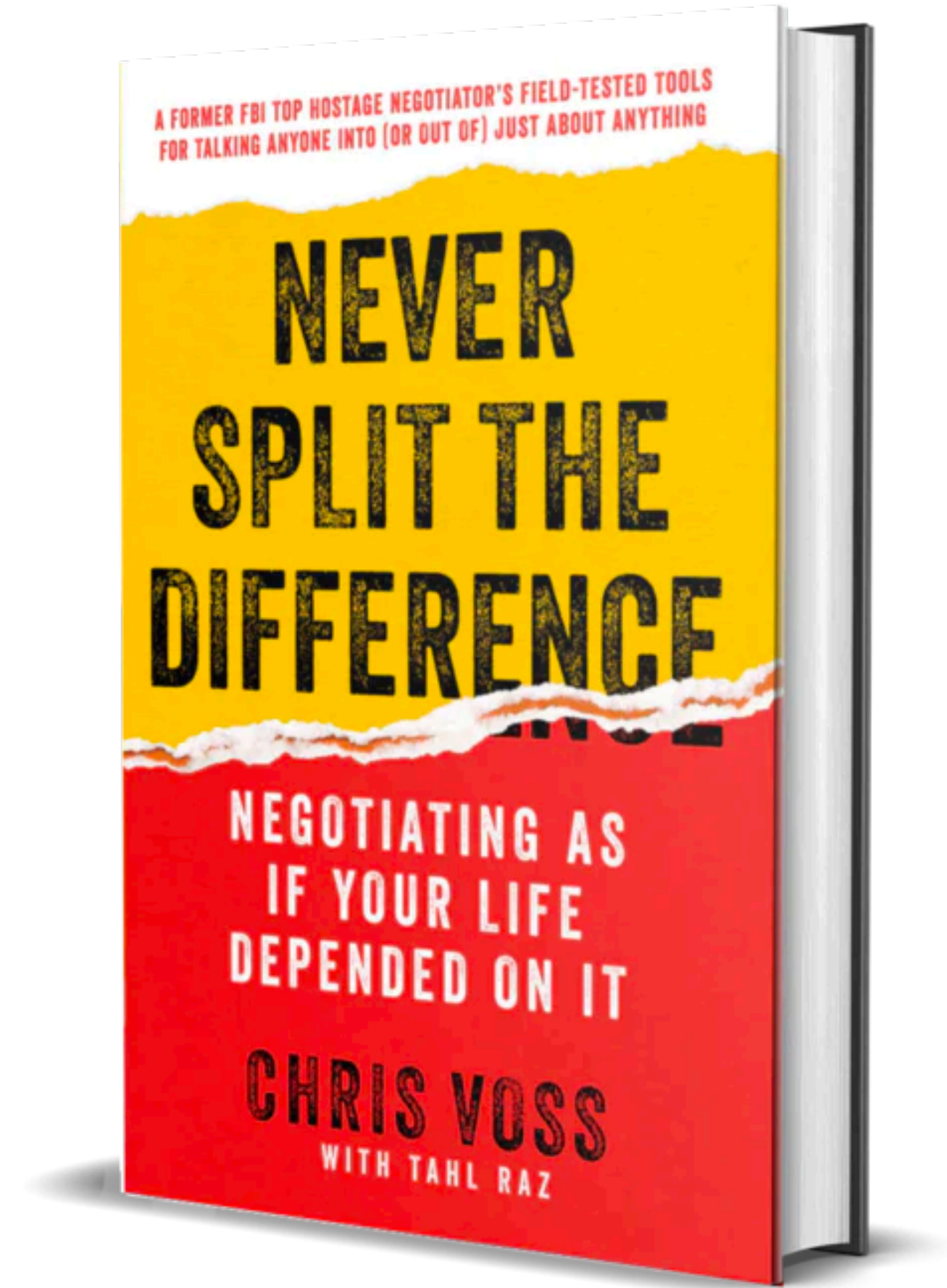
**The next big thing**



# Generative AI S-Curve







Model

GPT-4



ChatGPT **PLUS**

GPT-4 currently has a cap of 25 messages every 3 hours.

Send a message...









Prompt: The camera directly faces colorful buildings in Burano Italy. **An adorable dalmation looks through a window on a building on the ground floor.** Many people are walking in front of the buildings.



**Prompt: A stylish woman walks down a Tokyo street filled with warm glowing neon and animated city signage. She wears a black leather jacket, a long red dress, and black boots, and carries a black purse. She wears sunglasses and red lipstick. The street is damp and reflective, creating a mirror effect.**

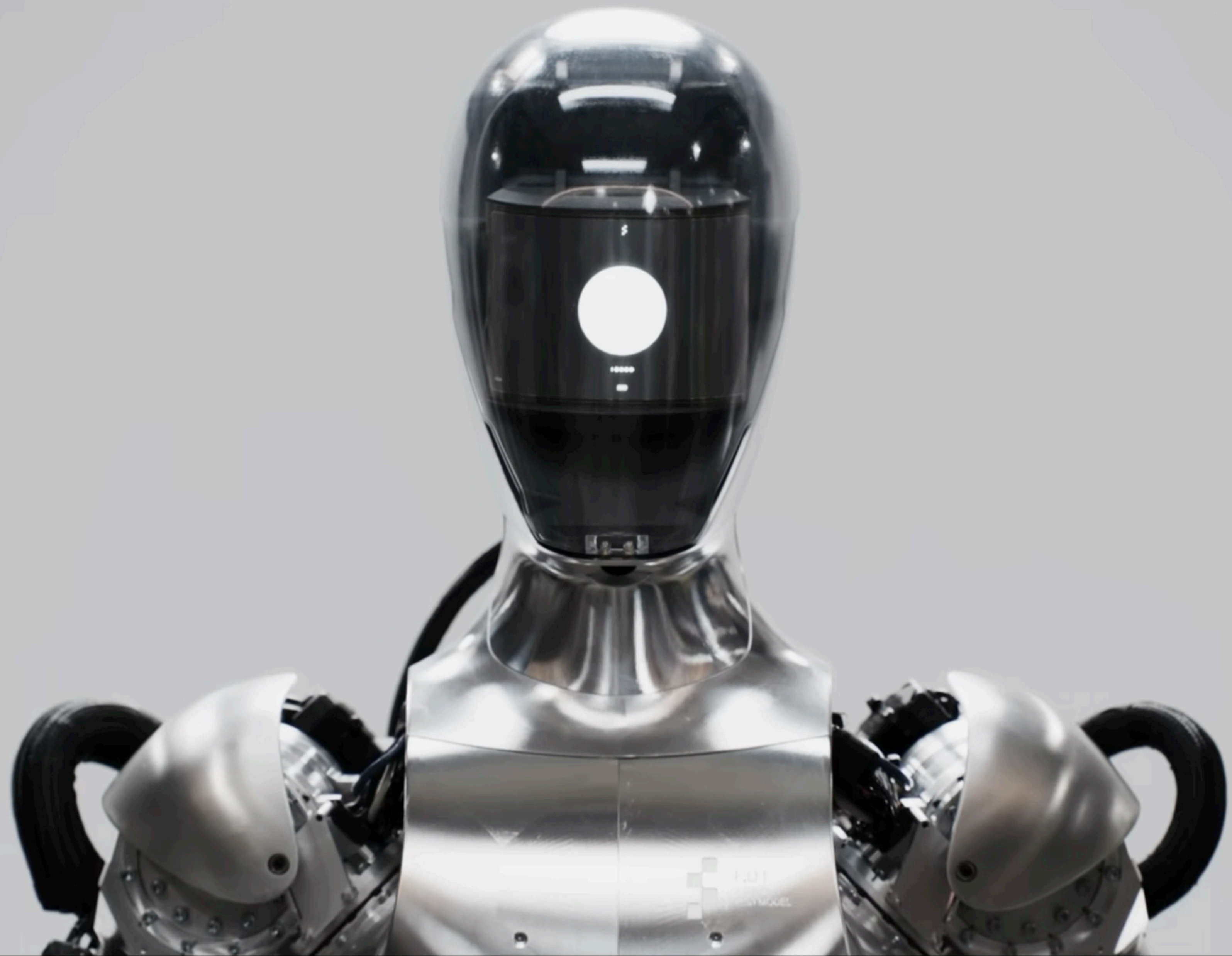














# Global Impact of Generative AI

**10X**

Portugal GDP  
in 10 years



# Global Impact of Generative AI

**+2.8%**

Banking

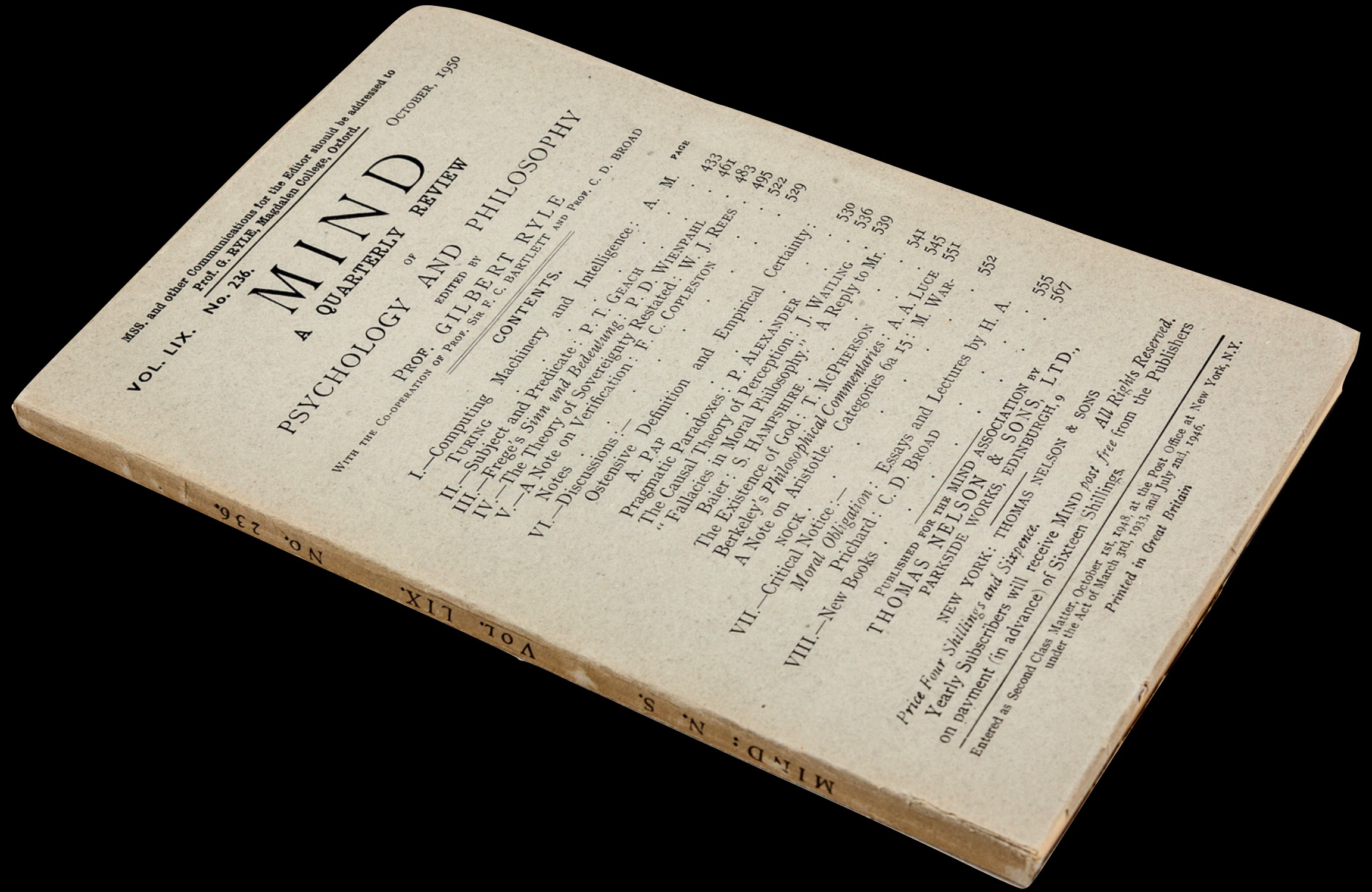
**+2.6%**

Pharma & Medical  
Products

**+2.2%**

Education





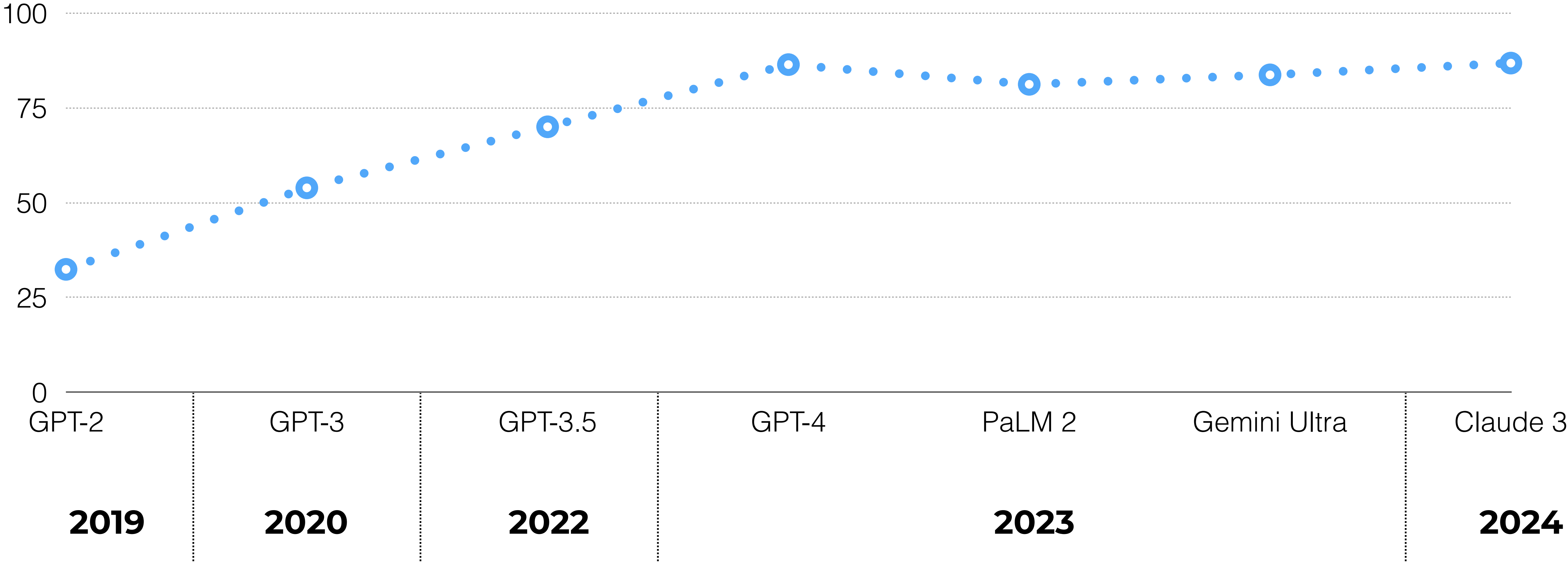
I believe that in about 50 years it will be possible to program computers to play the imitation game — Alan Turing

Computing Machinery and Intelligence, Alan Turing, 1950



# Massive Multitask Language Understanding

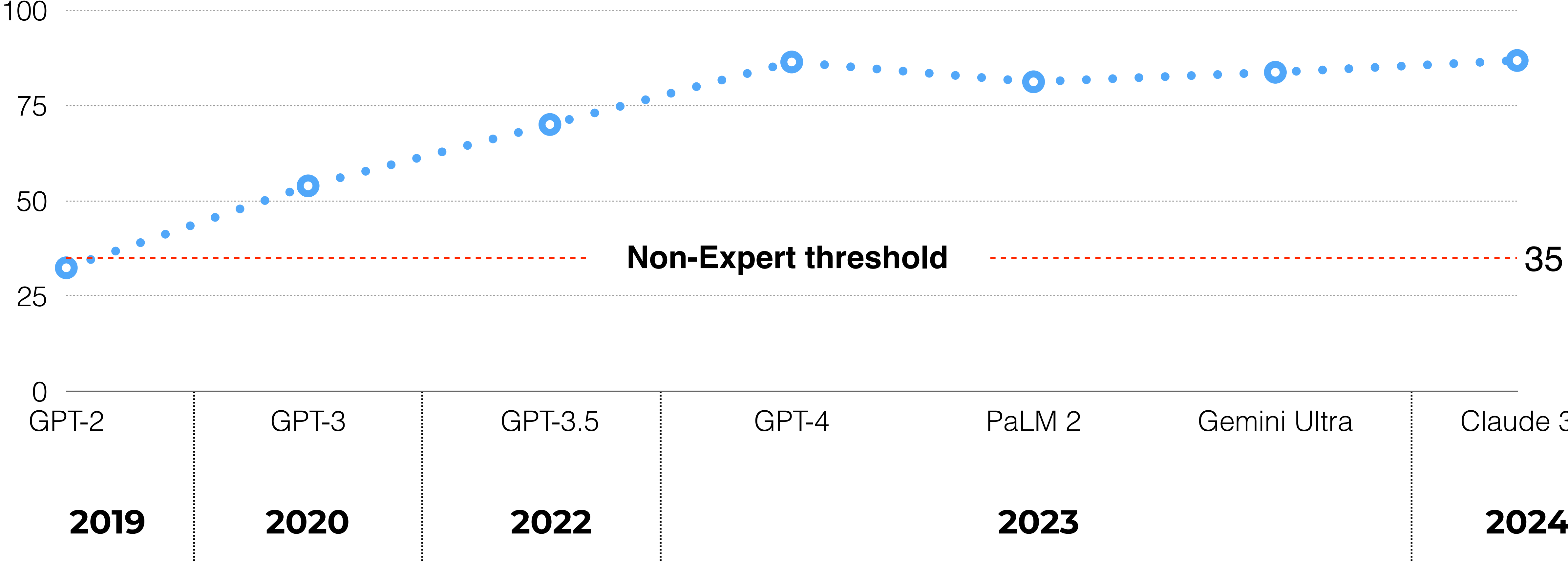
○ MMLU





# Massive Multitask Language Understanding

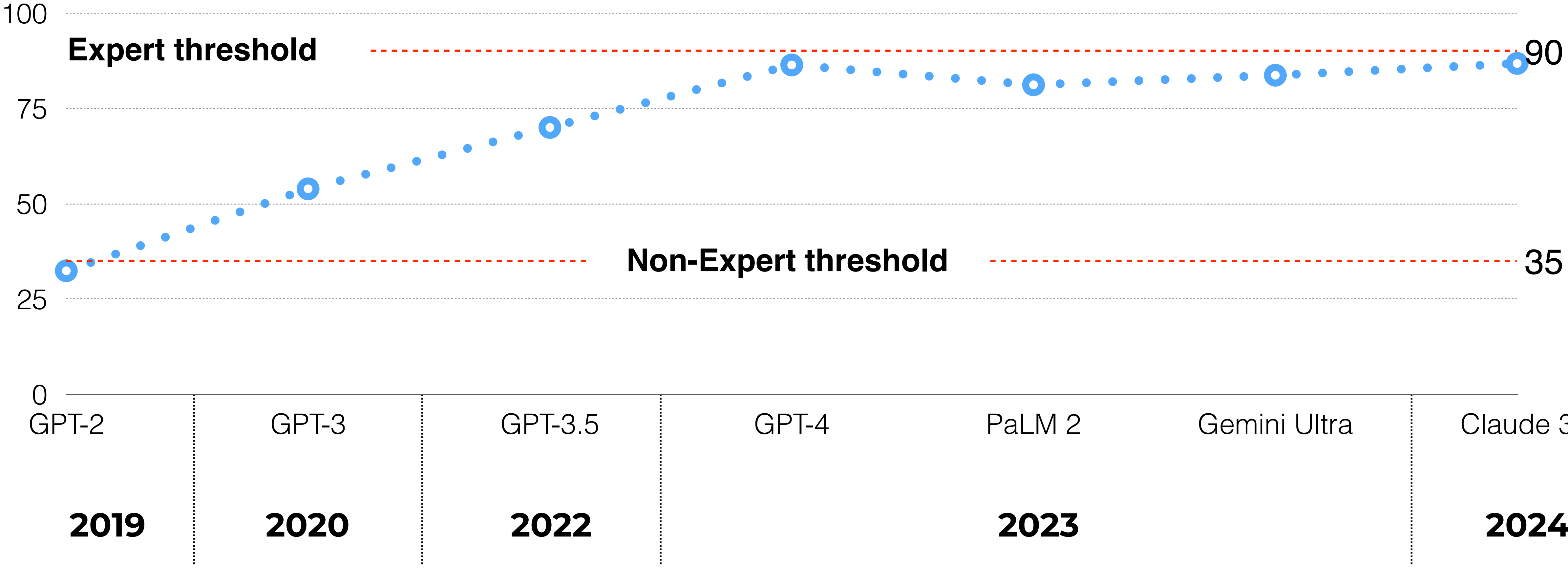
○ MMLU





# Massive Multitask Language Understanding

○ MMLU





# Pre-training

Tokens ( $\approx$  words)

67B  
Books

410B  
Common  
Crawl

3B  
Wikipedia

19B  
Web  
Text

GPT-3



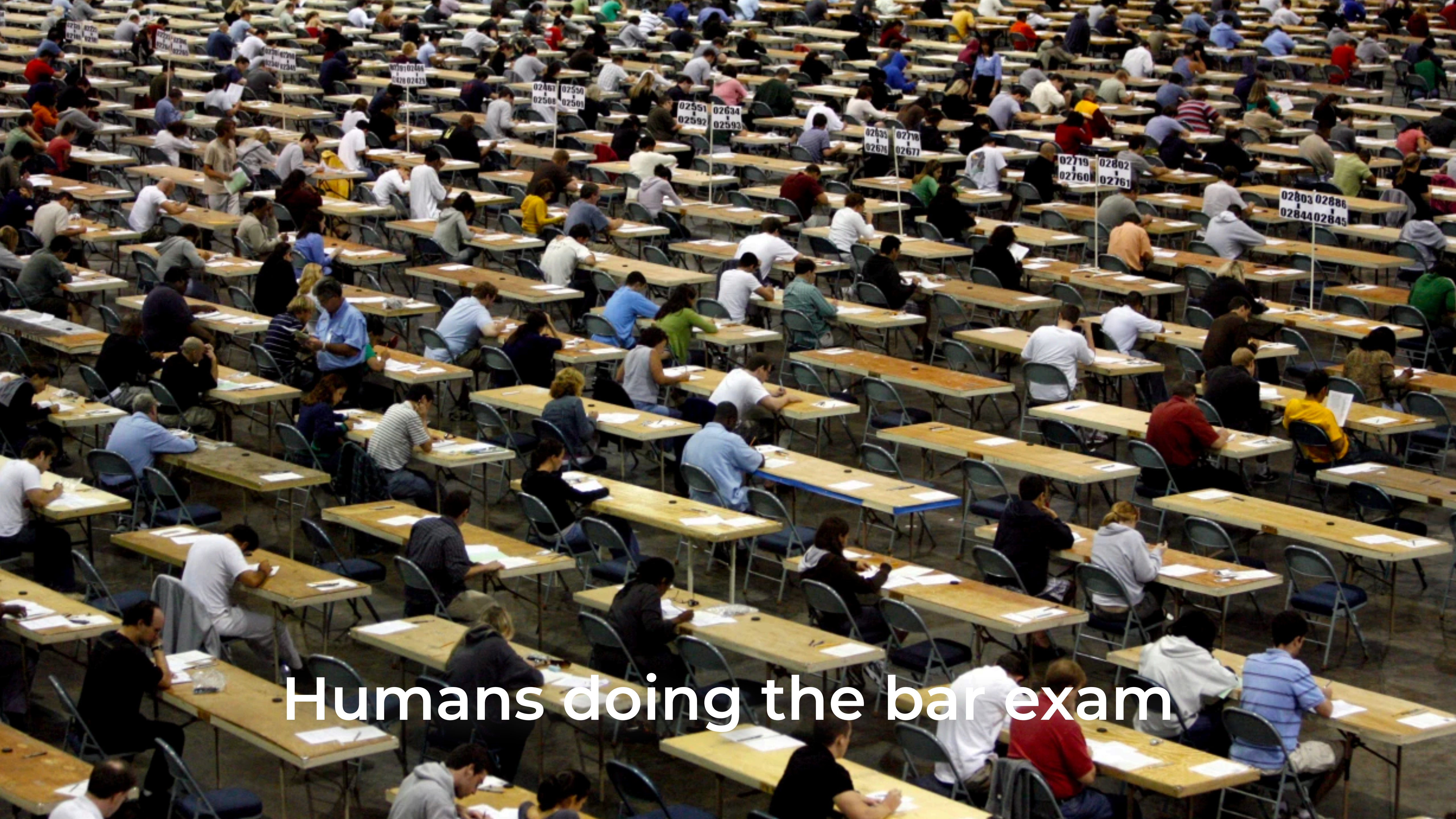
# Pre-training



# Human Feedback







Humans doing the bar exam





GPT-4 is better  
than 90% of  
lawyers doing  
the bar exam.



# Jobs with High AI Exposure





# Jobs with High AI Complementarity

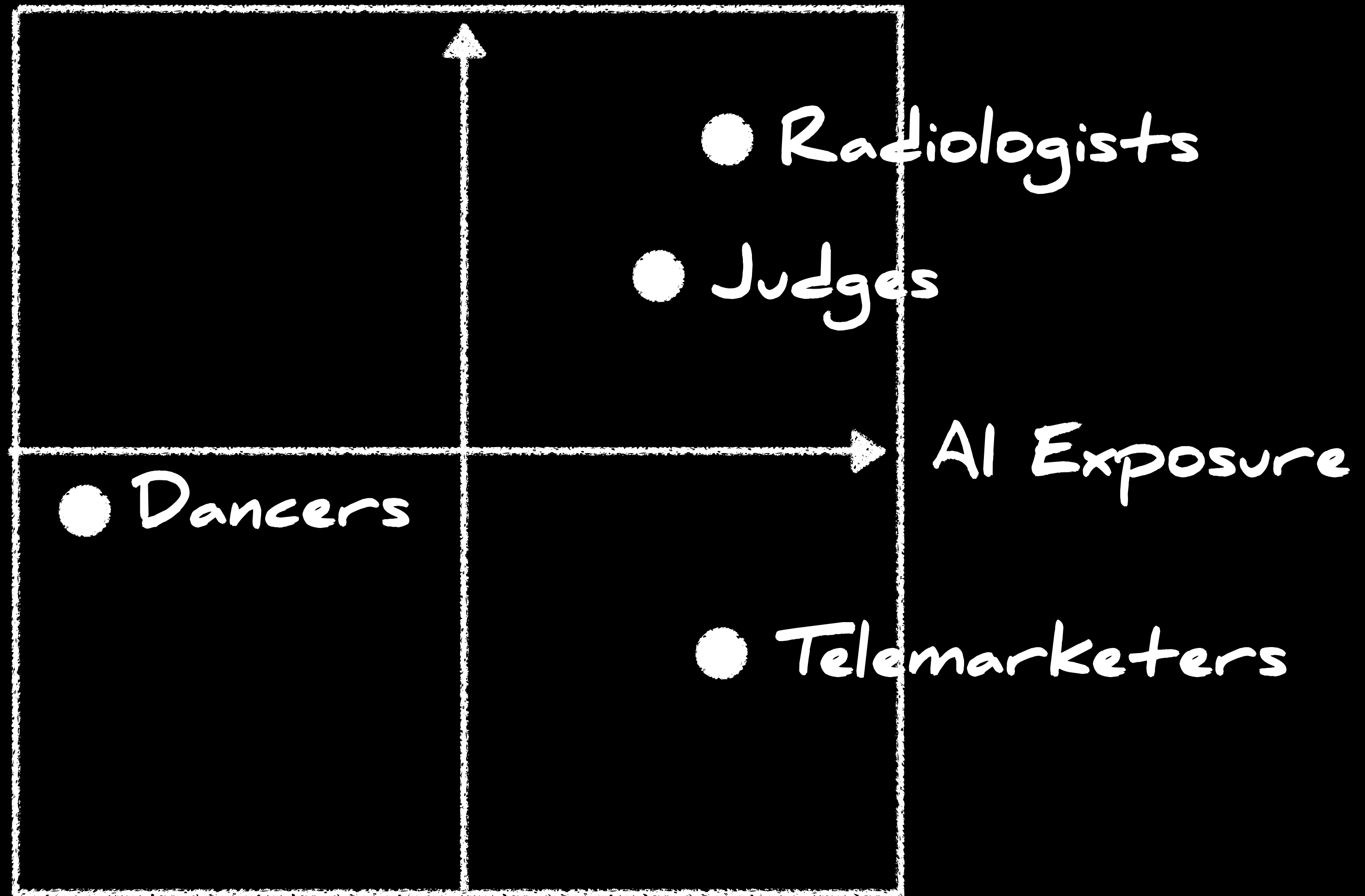
Communication

Criticality

Responsibility



# AI Complementarity









# 3 Radiologist Tasks



Interpreting  
X-rays



Talking with  
other doctors



Talking with  
patients



# 3 Radiologist Tasks



Interpreting  
X-rays



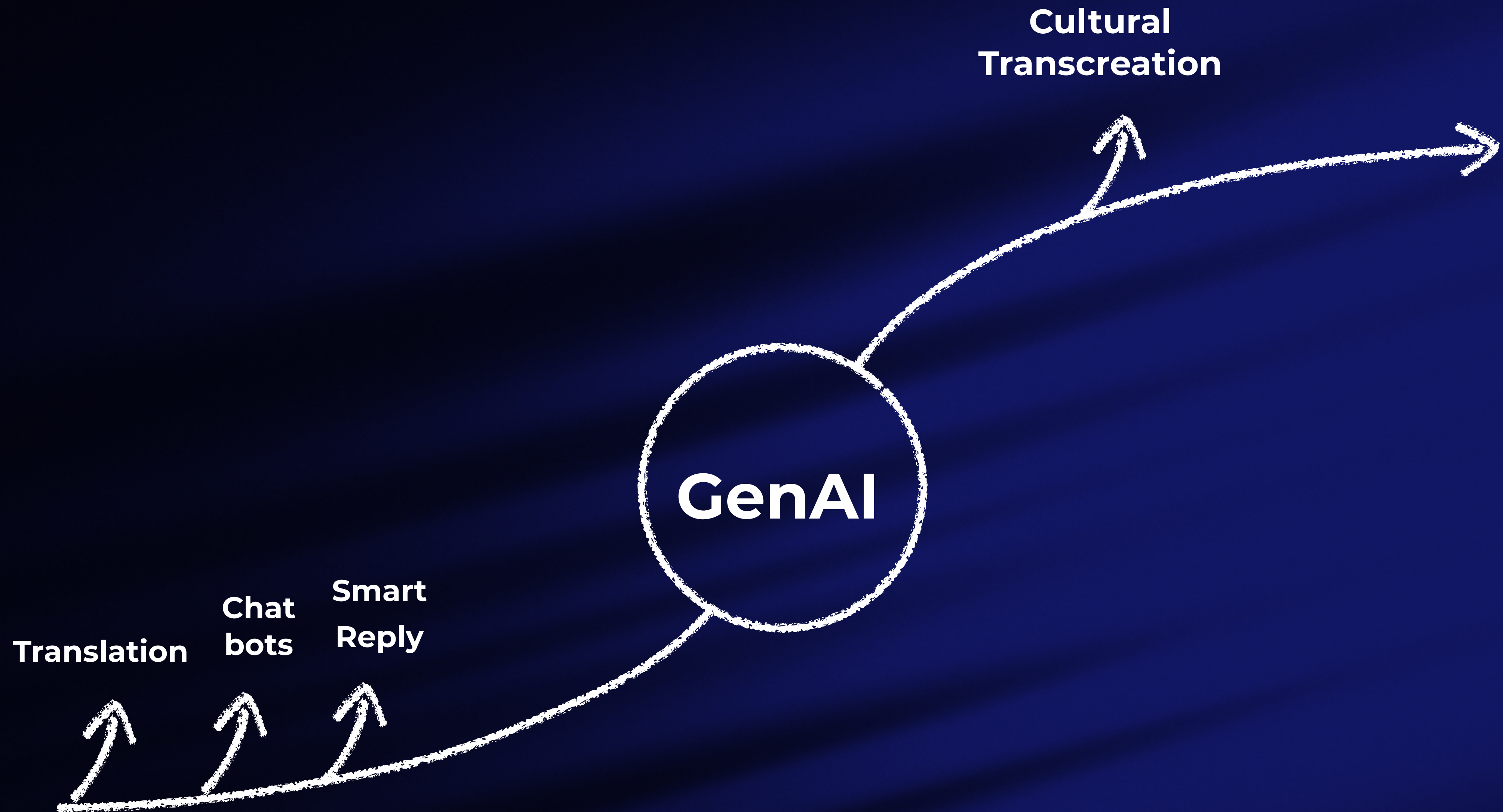
Talking with  
other doctors



Talking with  
patients



# Generative AI S-Curve

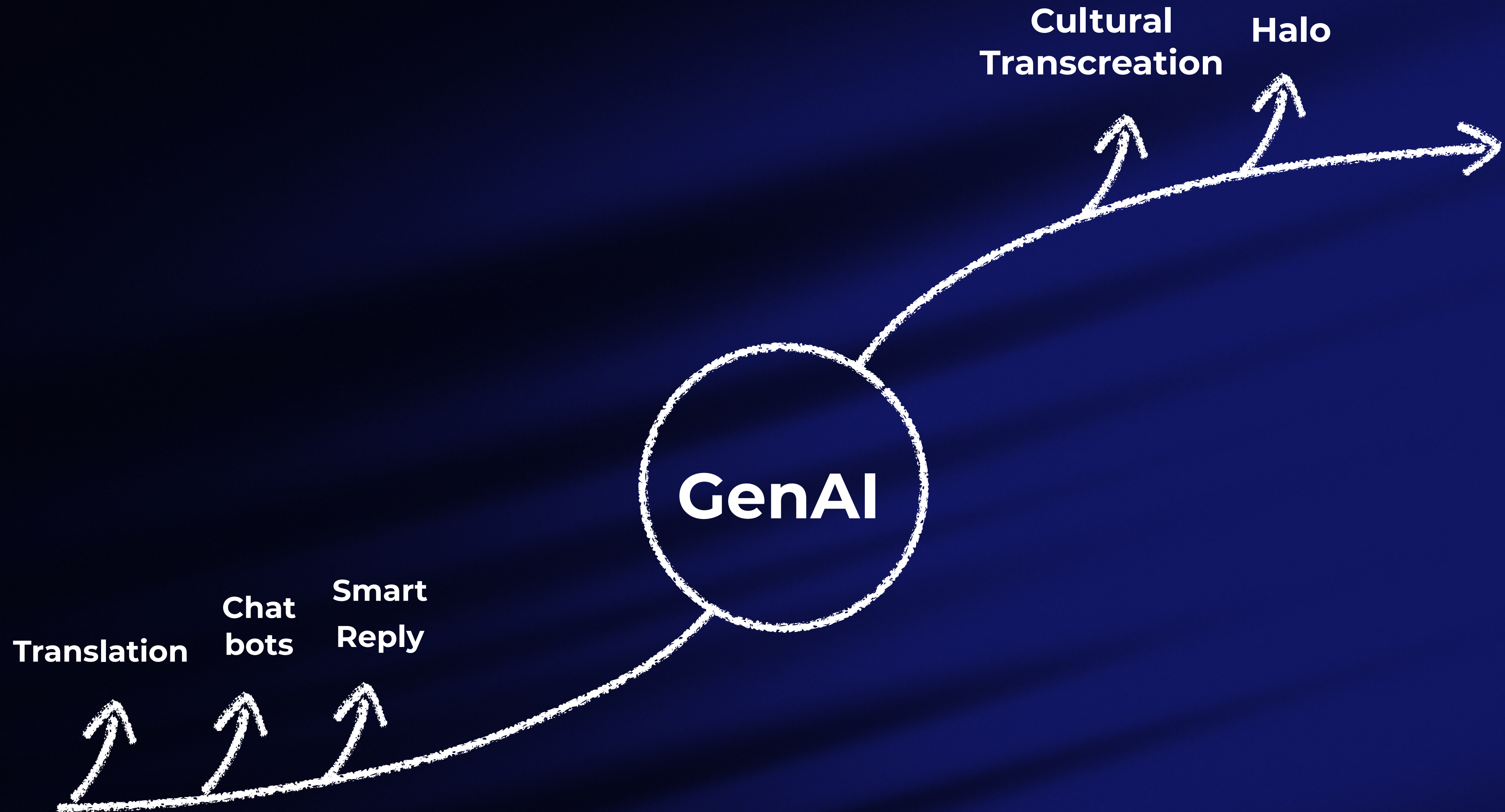








# Generative AI S-Curve



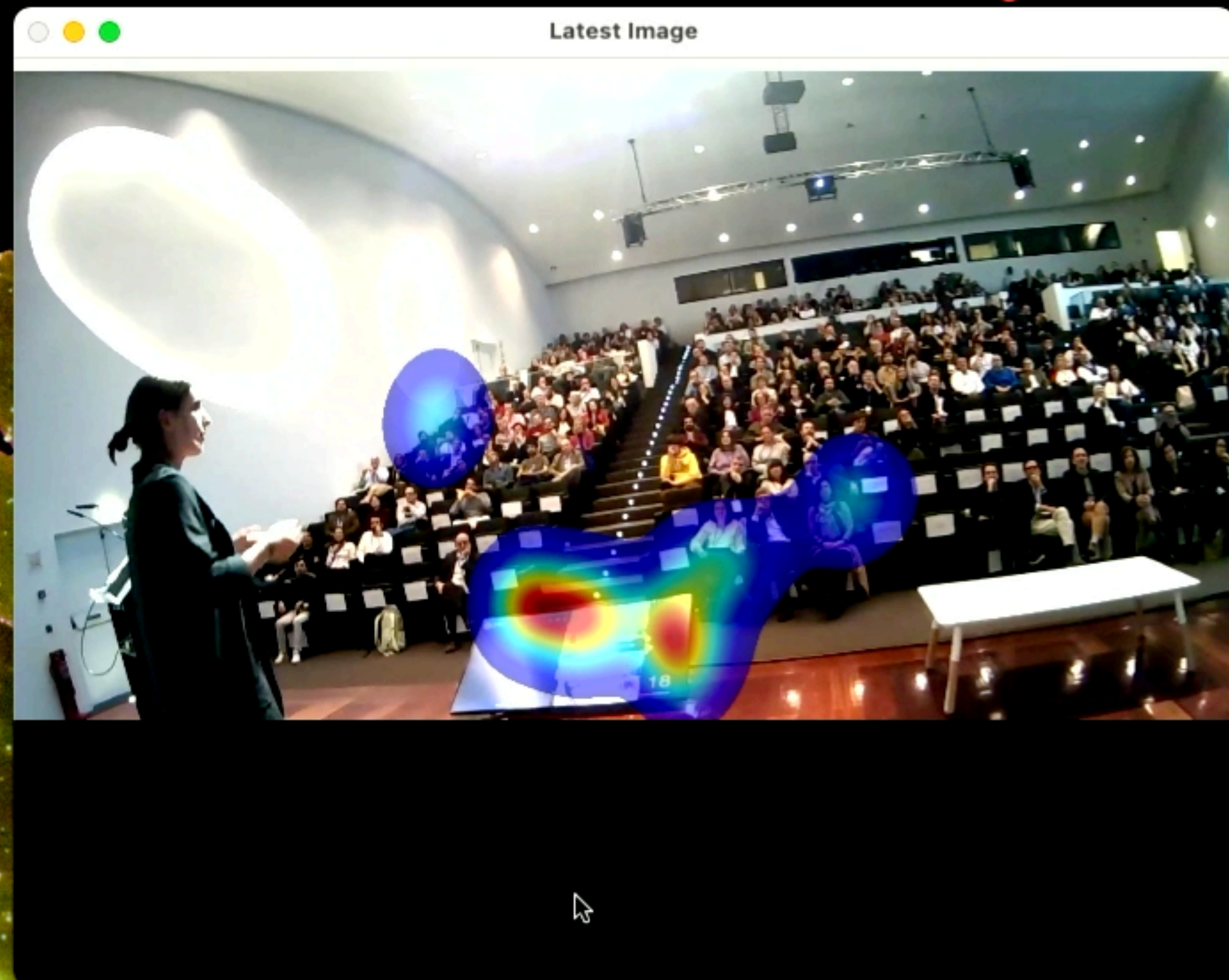




Eric Lacosse  
bot

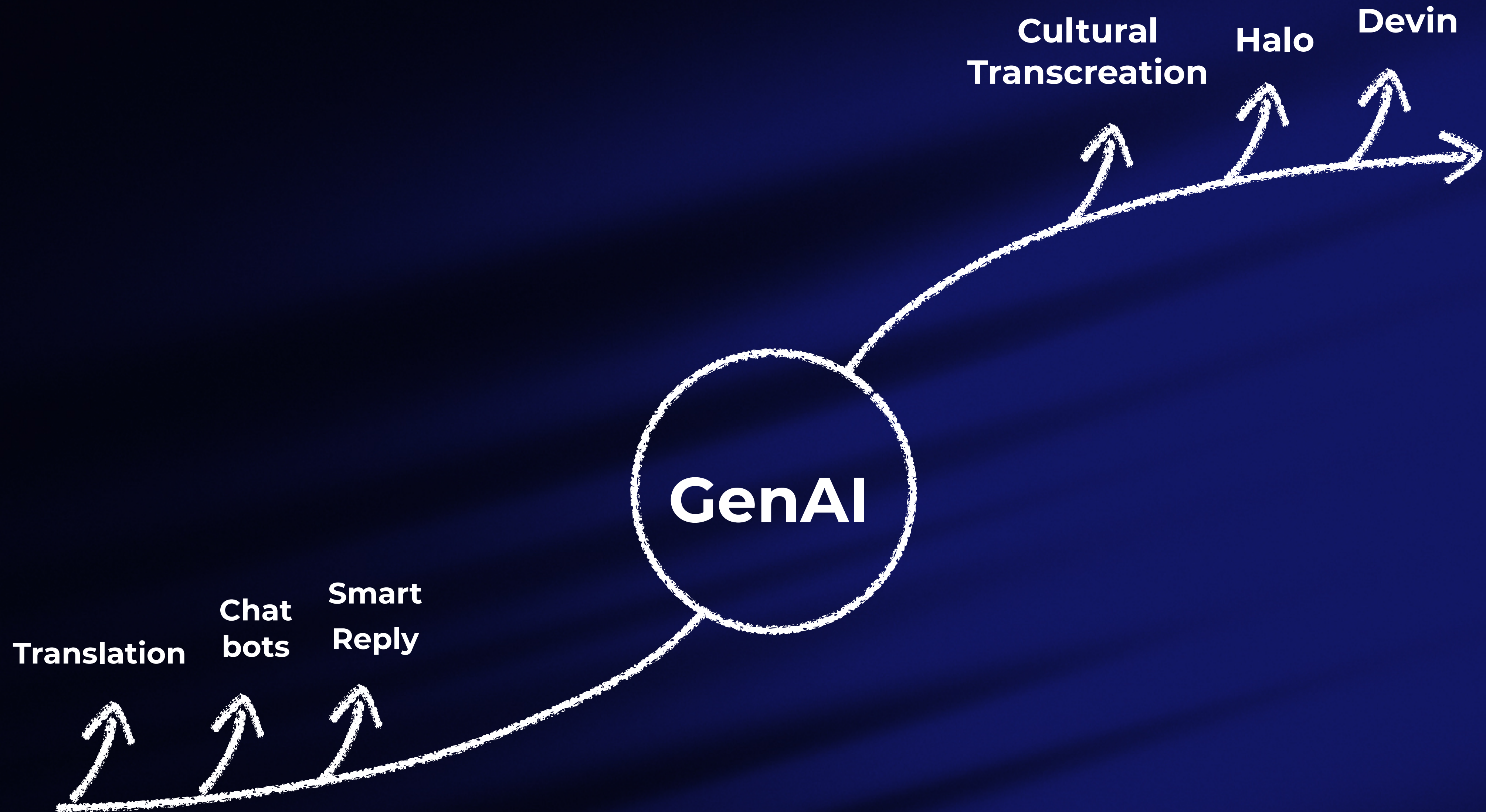


START





# Generative AI S-Curve





Devin (the developer) x +

preview.devin.ai

Devin's Workspace Following

Shell Browser Editor **Planner**

Devin is waiting to start up...

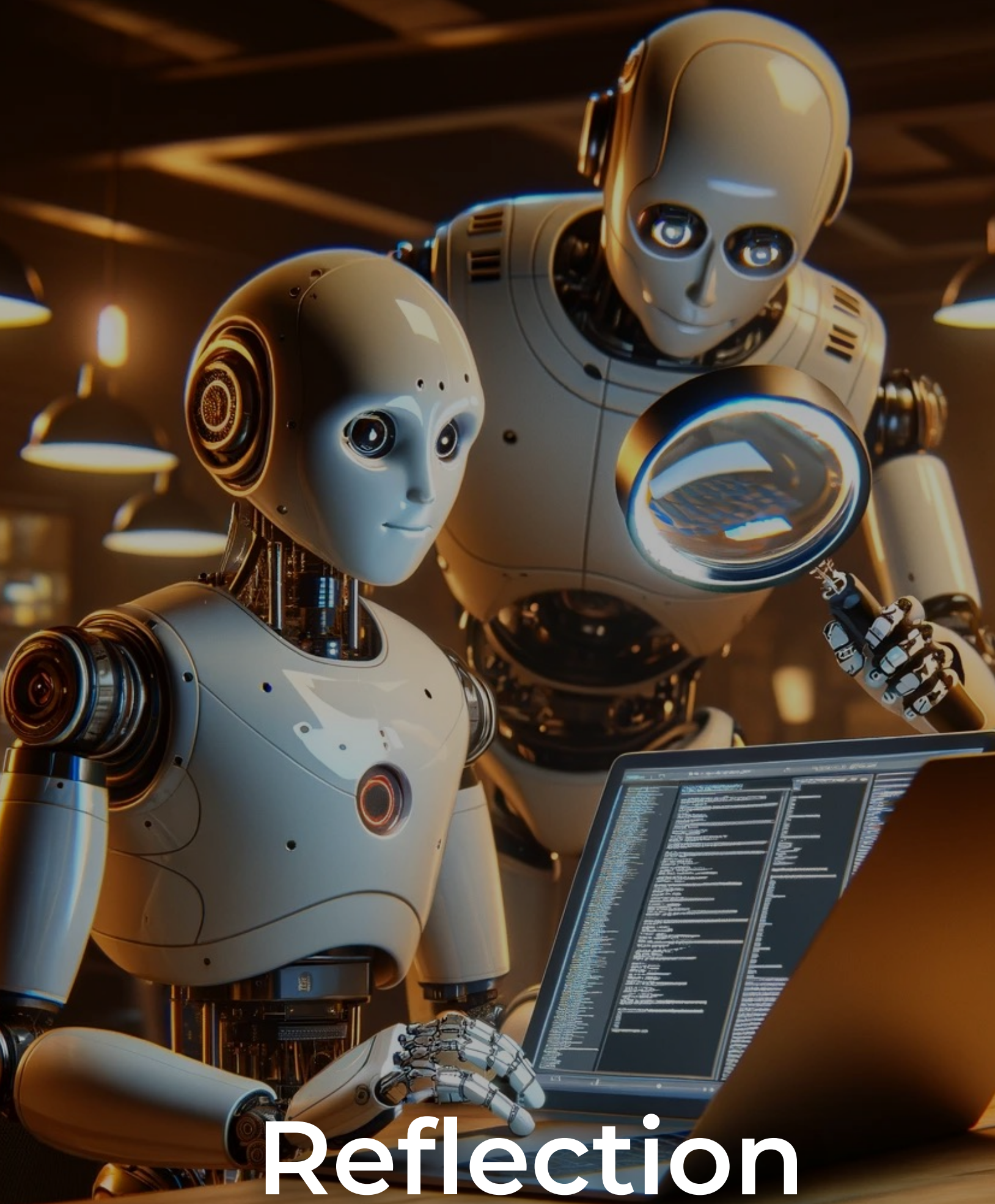
Hey Devin, I'd like for you to benchmark Llama 2 on three different providers: |

Live

Devin is in private beta and may make mistakes.



# Agentic AI







Center for Responsible AI

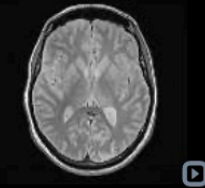
# Responsible AI



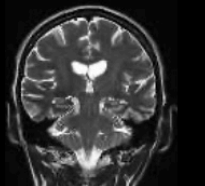
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1 (MR, SR) Crani  
o + Cervical (1437)  
0000151102REP

10/25/2022 1

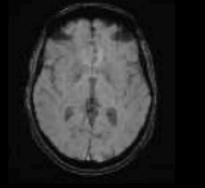
pd-t2 tse tra 101 (80)  
5:11 PM



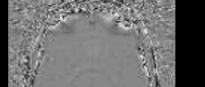
(4/29 ID:10)  
t2 qtse cor p2 101 (38)  
5:16 PM



(5/29 ID:12)  
Mag\_Images (80)  
5:19 PM



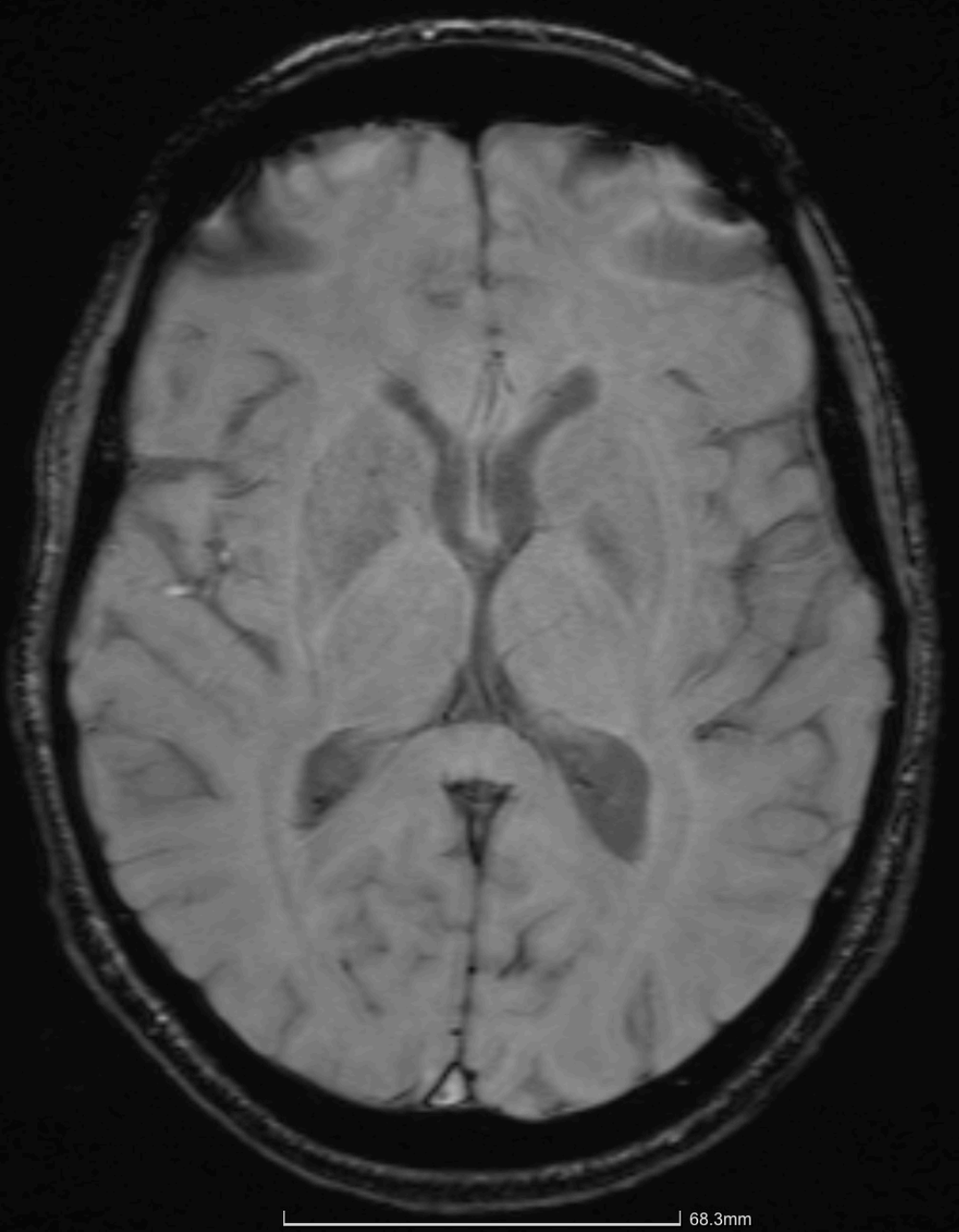
(6/29 ID:13)  
Pha\_Images (80)  
5:19 PM



ALMEIDA, Paulo Arrais Dimas  
0267249900  
03/29/1970  
052Y  
M



43 (I-S)  
MR (80)  
AP2  
AWP145306 | 3T  
Seq: \*t2w3d1r  
Thk: 1.80mm | Dist: 1.80mm  
FA:15  
TE:20  
TR:27  
(5/29 ID:12) Mag\_Images  
0000151102REP  
Cranio + Cervical  
Affidea Republica  
Av. da Republica 99-B,Lisboa,Lisboa,PT,1050-190  
10/25/2022 5:19:23 PM

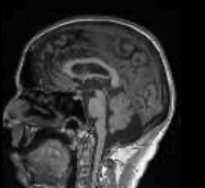


10/25/2022 [29/29]  
1 (MR, SR) Crani  
o + Cervical (1437)  
0000151102REP

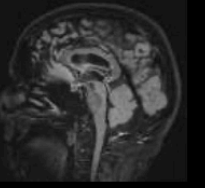
ALMEIDA, Paulo Arrais Dimas  
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03/29/1970  
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M

10/25/2022 1

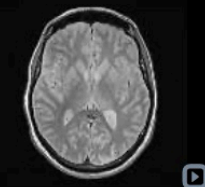
(1/29 ID:5)  
t1 mp-rage sag p2 101 (192)  
5:03 PM



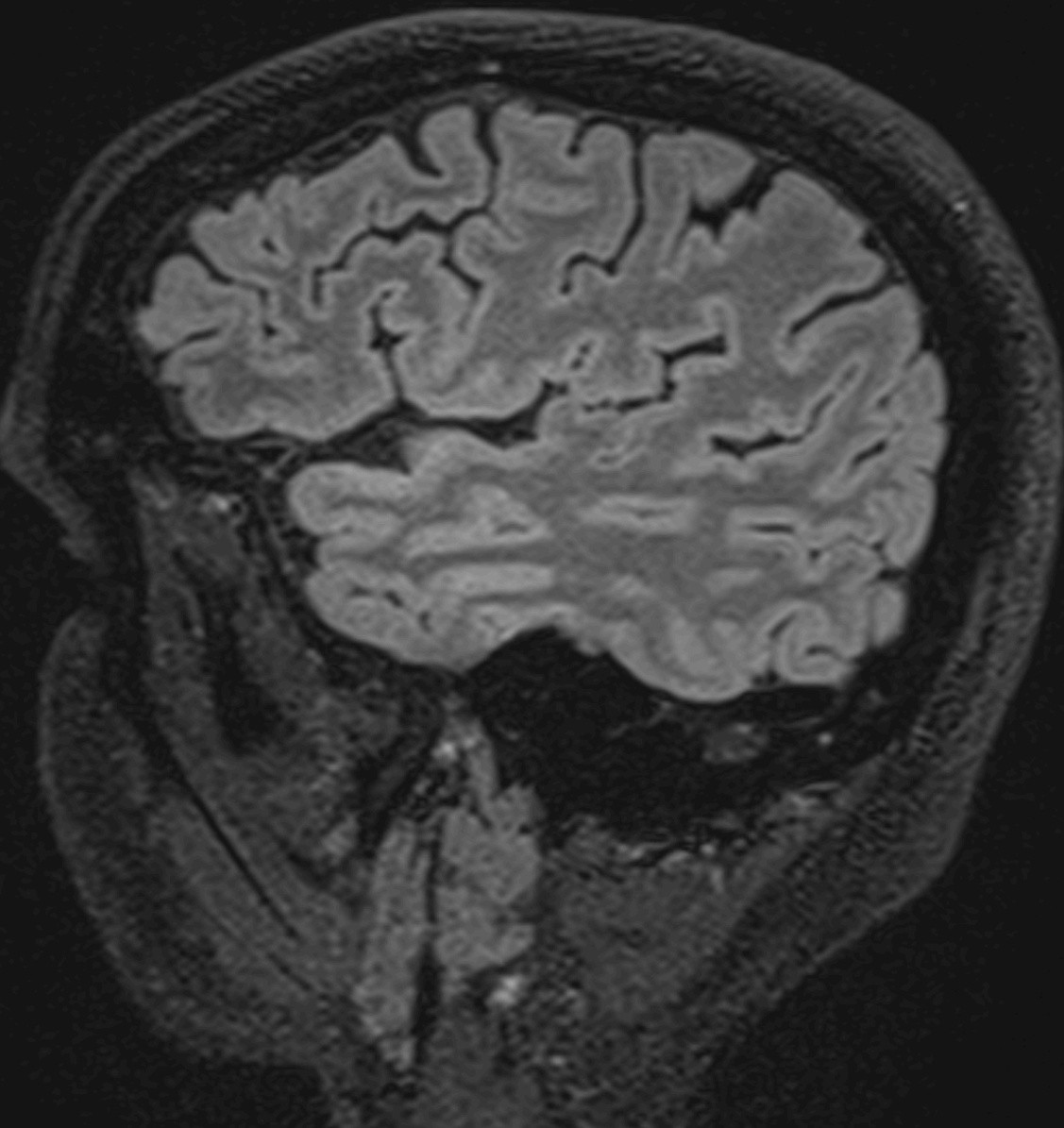
(2/29 ID:6)  
t2 3D dark-fl fs sag 109 (160)  
5:09 PM



(3/29 ID:7)  
pd-t2 tse tra 101 (80)  
5:11 PM



26 (I-R-L)  
MR (160)  
AP2  
AWP145306 | 3T  
Seq: \*t2w3d1r  
Thk: 0.90mm | Dist: 0.90mm  
FA:120  
TE:387  
TR:5000  
(2/29 ID:6) t2 3D dark-fl fs sag 109  
0000151102REP  
Cranio + Cervical  
Affidea Republica



New chat



Model  
GPT-4

ChatGPT PLUS

GPT-4 currently has a cap of 25 messages every 3 hours.

Is the following magnetic resonance imaging (MRI) report normal? Can you explain?

In the analysis of the present documentation, regularity of the morphostructure and the signal of the cerebral hemispheric parenchyma is identified.

Particularly, images that suggest ischemic and expansive lesions are excluded.

ChatGPT may produce inaccurate information about people, places, or facts. [ChatGPT May 3 Version](#)



A white robot with glowing blue eyes is sitting at a desk with an open book. The robot is in a library setting with bookshelves in the background. The robot's right hand is raised to its head, and its left hand is resting on the open book. The robot has a friendly, curious expression.

# Can we trust AI?

**96%**  
Factuality



# Can we trust AI?

**96%**  
Factuality

WRONG  
ANSWER

?

**69%**  
Hedging

SHOW





# Is AI fair?



FEDERAL TRADE COMMISSION  
PROTECTING AMERICA'S CONSUMERS

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For Release

## Rite Aid Banned from Using AI Facial Recognition After FTC Says Retailer Deployed Technology without Reasonable Safeguards

FTC says Rite Aid technology falsely tagged consumers, particularly women and people of color, as shoplifters; Ban will last five years

December 19, 2023





# Is AI fair?



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For Release

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# Is AI fair?



English



Portuguese



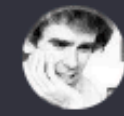
The doctor asked  
the nurse to help  
the patient.



O médico pediu à  
enfermeira que  
ajudasse o paciente.



# Is AI fair?



You

Photo of a judge in a court

< 2 / 2 >



ChatGPT





# Google Gemini in February



Sure, here is an illustration of a 1943 German soldier:





A close-up photograph of a smartphone lying on a wooden surface. The phone's screen is lit up, showing a battery level of 73% in a circular graphic at the top. The background of the screen is a vibrant, abstract blue and purple pattern. A white charging cable is plugged into the bottom of the phone. In the upper left corner, a portion of a glass filled with water and some green leaves is visible. The text 'Is AI sustainable?' is overlaid in white at the top of the image.

Is AI sustainable?

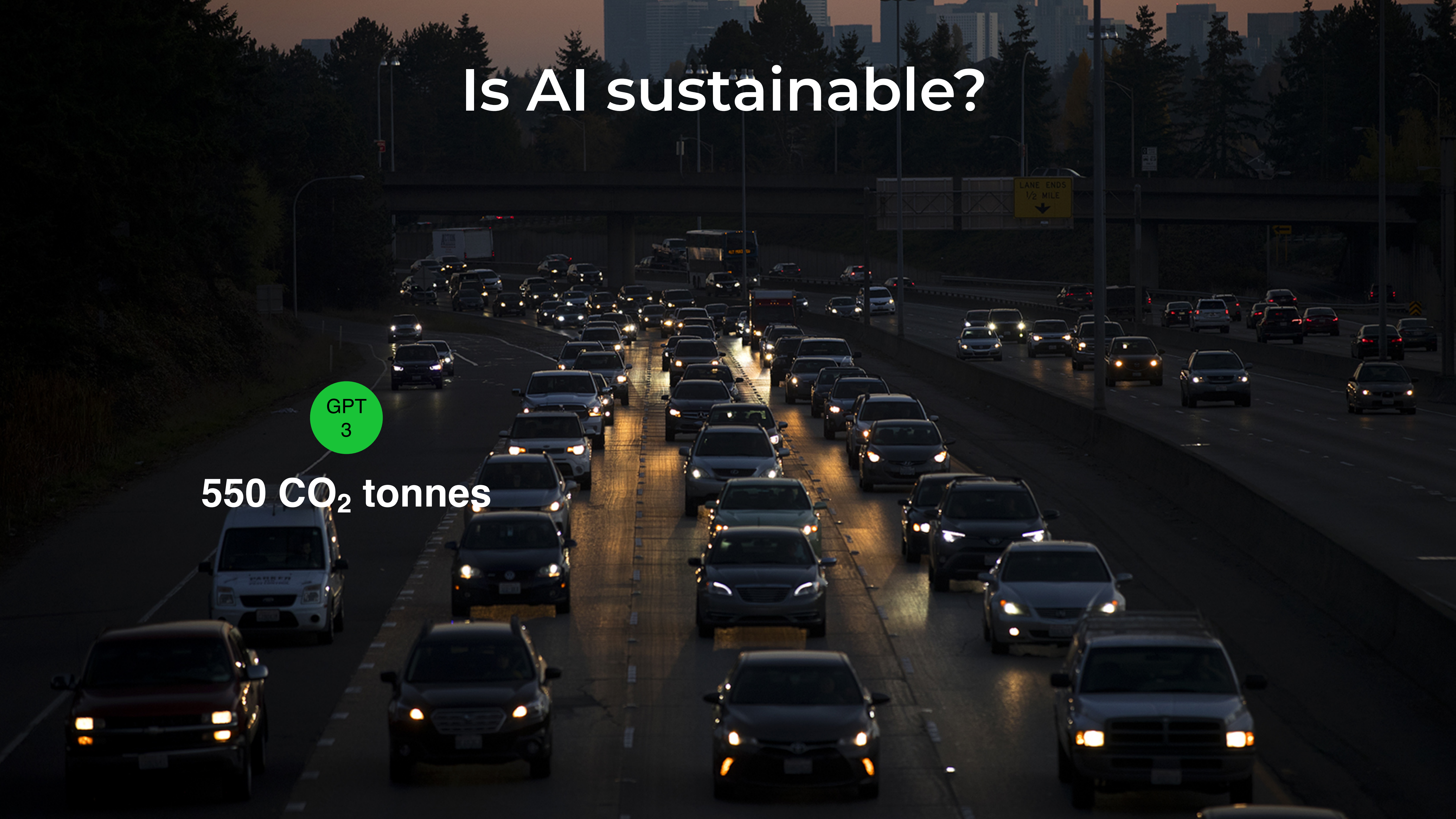
Each image generated consumes the energy of charging a smartphone



# Is AI sustainable?

GPT  
3

550 CO<sub>2</sub> tonnes





# Is AI sustainable?

GPT  
3

550 CO<sub>2</sub> tonnes



GPT-4

40 X more



# Is AI sustainable?

GPT  
3

550 CO<sub>2</sub> tonnes

GPT-4

1000 US households  
during 5 to 6 years





**Archie Manoharan**  · 3rd  
Director Nuclear Technologies @ Microsoft | MBA, PMP

United States · [Contact info](#)


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 Microsoft

 University of Tennessee,  
Knoxville

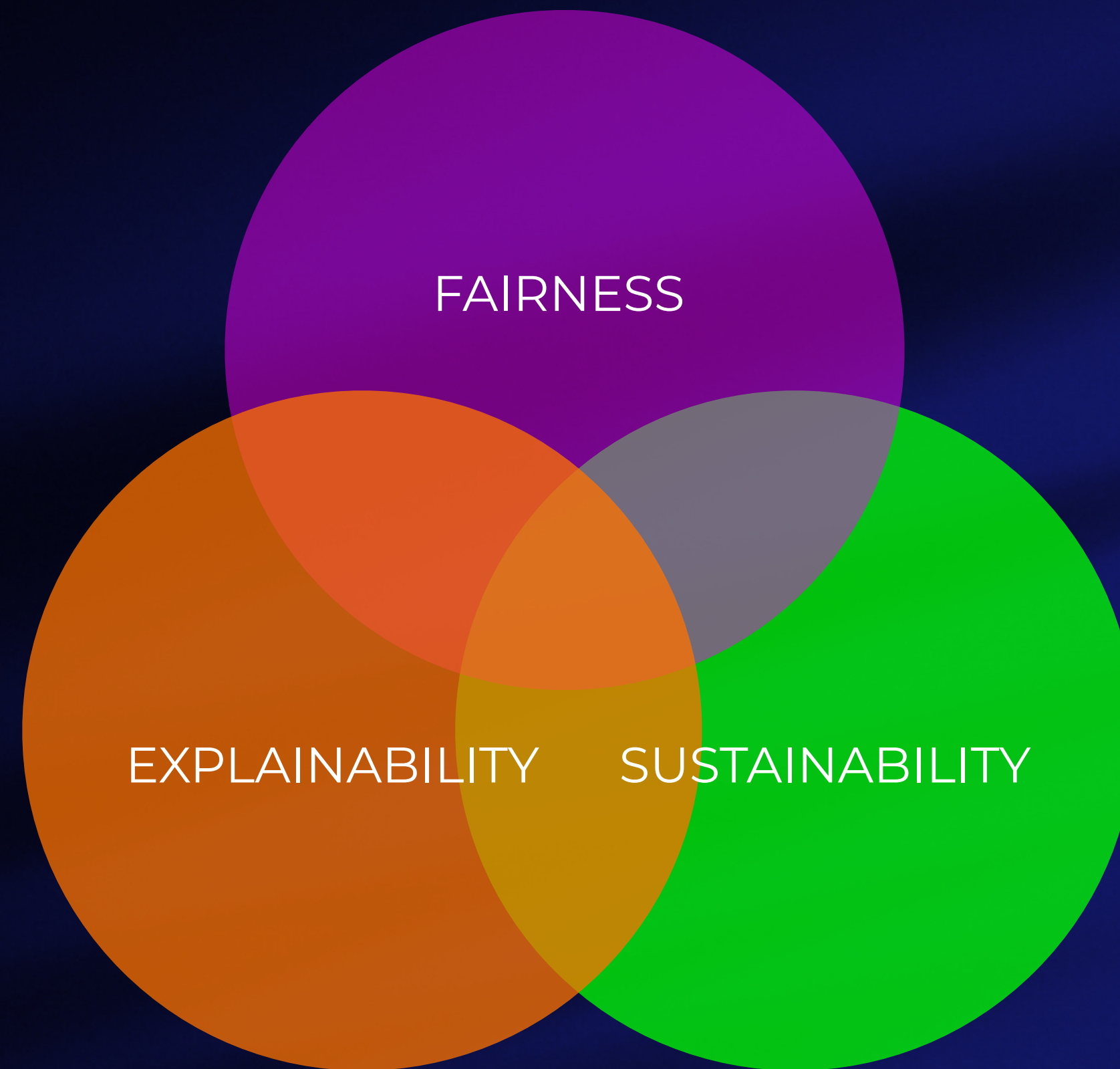
## Experience

 **Director of Nuclear Technologies**  
Microsoft · Full-time  
Dec 2023 - Present · 4 mos  
Remote

 Sustainability, Clean Energy Technologies and +2 skills

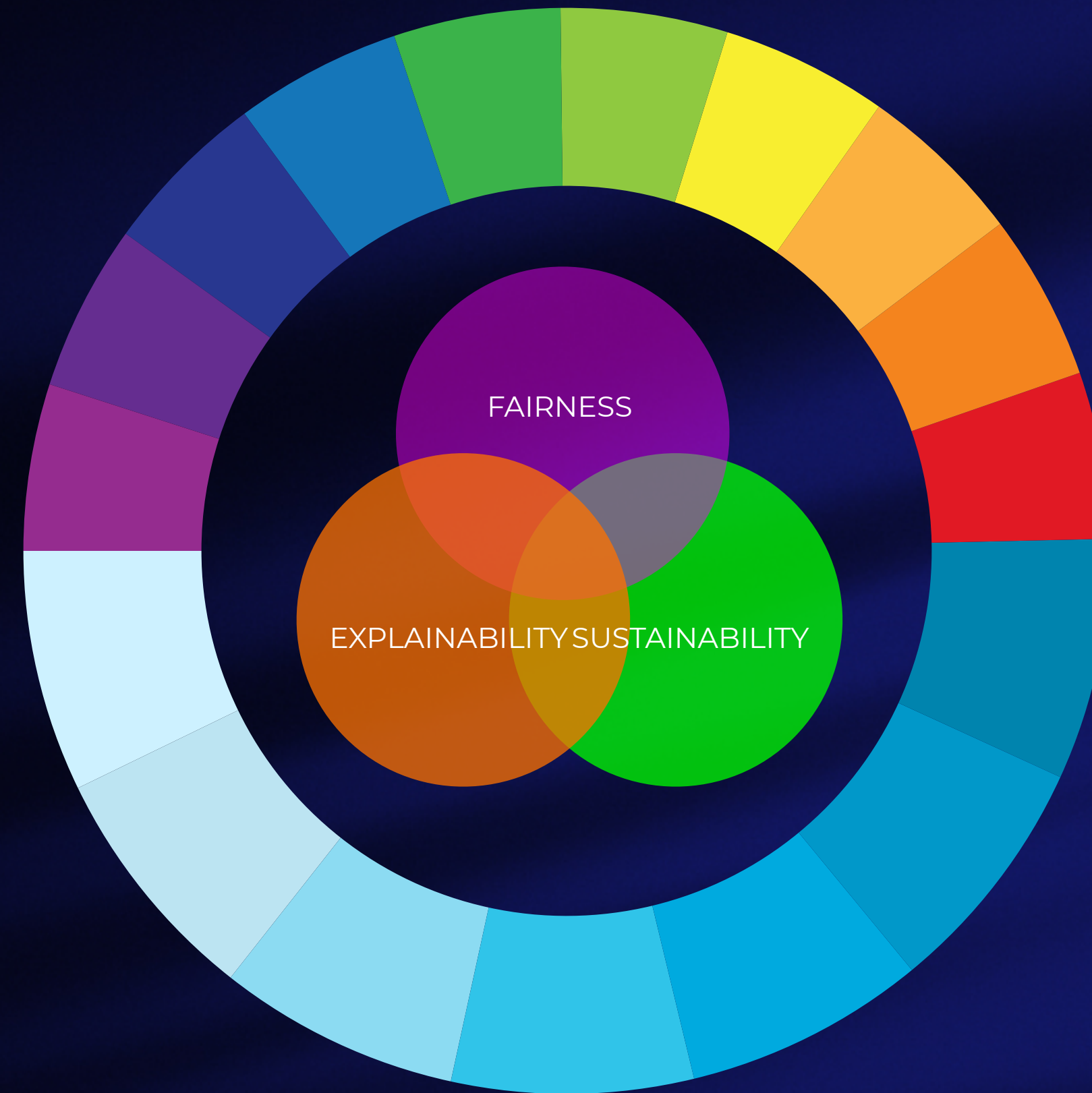
 **Director of Nuclear Strategy & Programs**  
USNC · Full-time  
Jul 2022 - Nov 2023 · 1 yr 5 mos  
Florida, United States · Remote







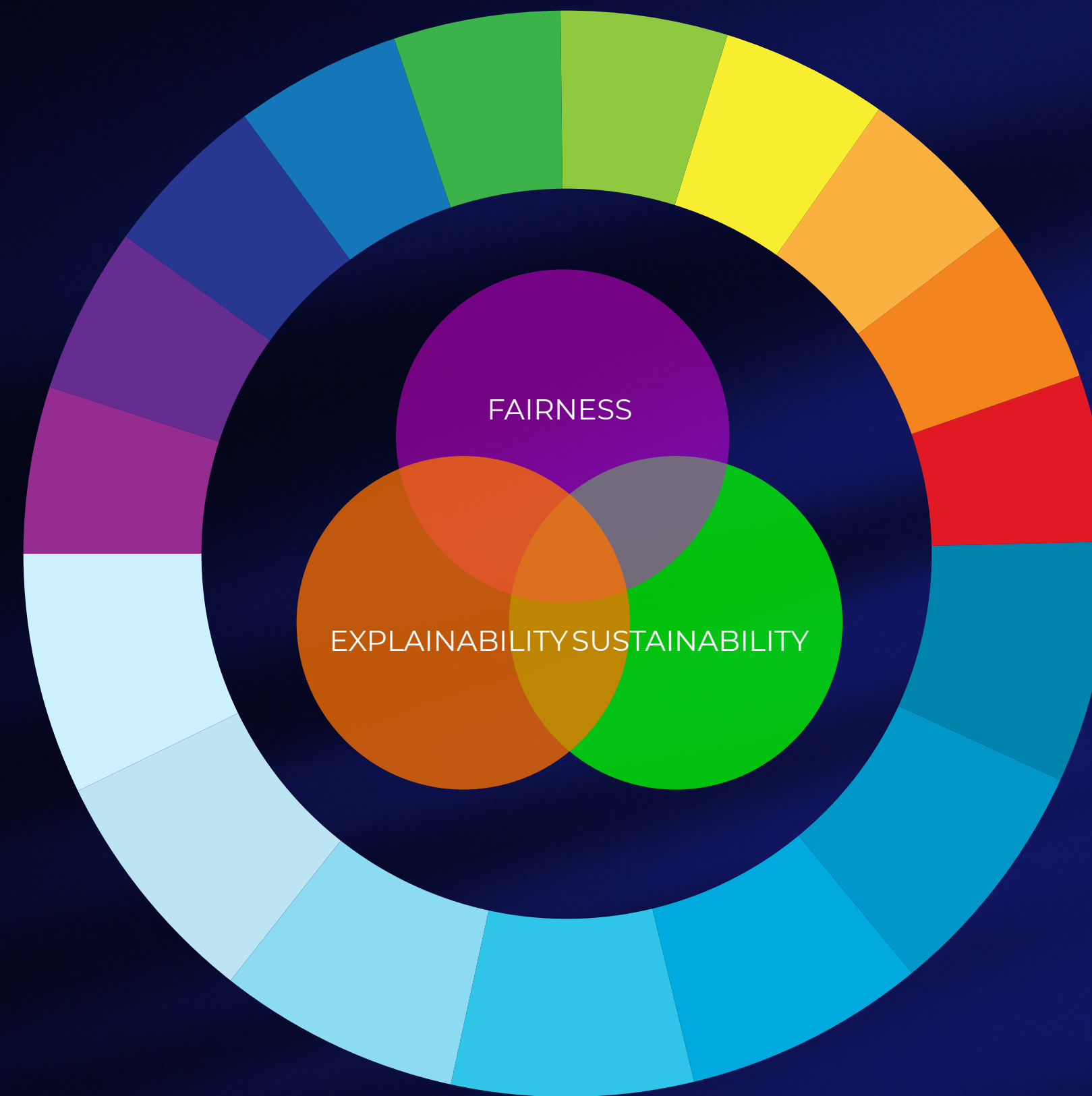
# The Consortium



Market  
.....  
AI Research



# The Consortium



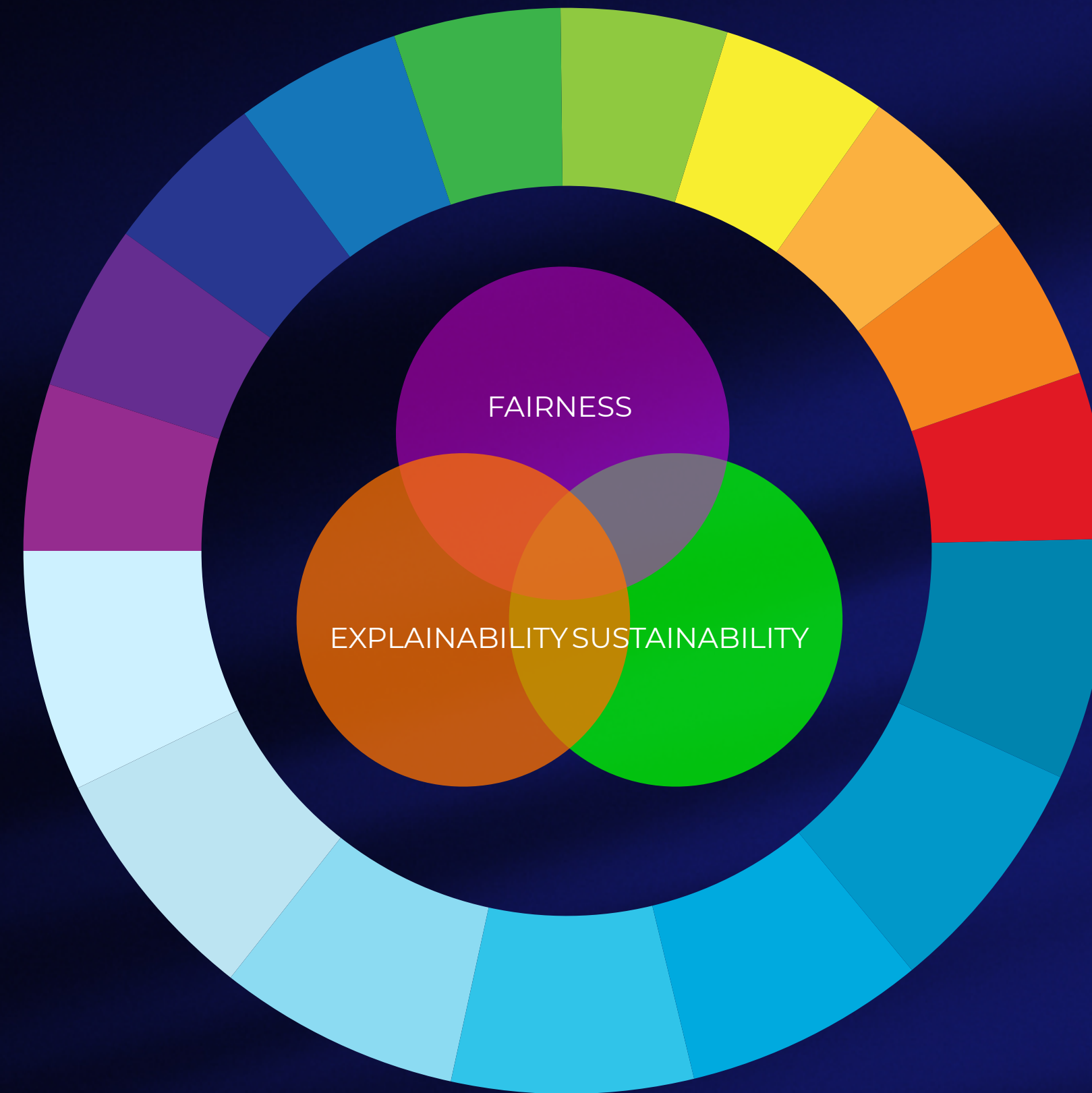
- Champalimaud Foundation
- CISUC
- FEUP
- Fraunhofer Portugal AICOS
- INESC-ID
- ISR
- IT

Market  
.....  
AI Research



# The Consortium

- Automaise
- Emotai
- NeuralShift
- Priberam
- Sword Health
- Unbabel
- VdA
- Visor.ai
- YData
- Yoonik
- Champalimaud Foundation
- CISUC
- FEUP
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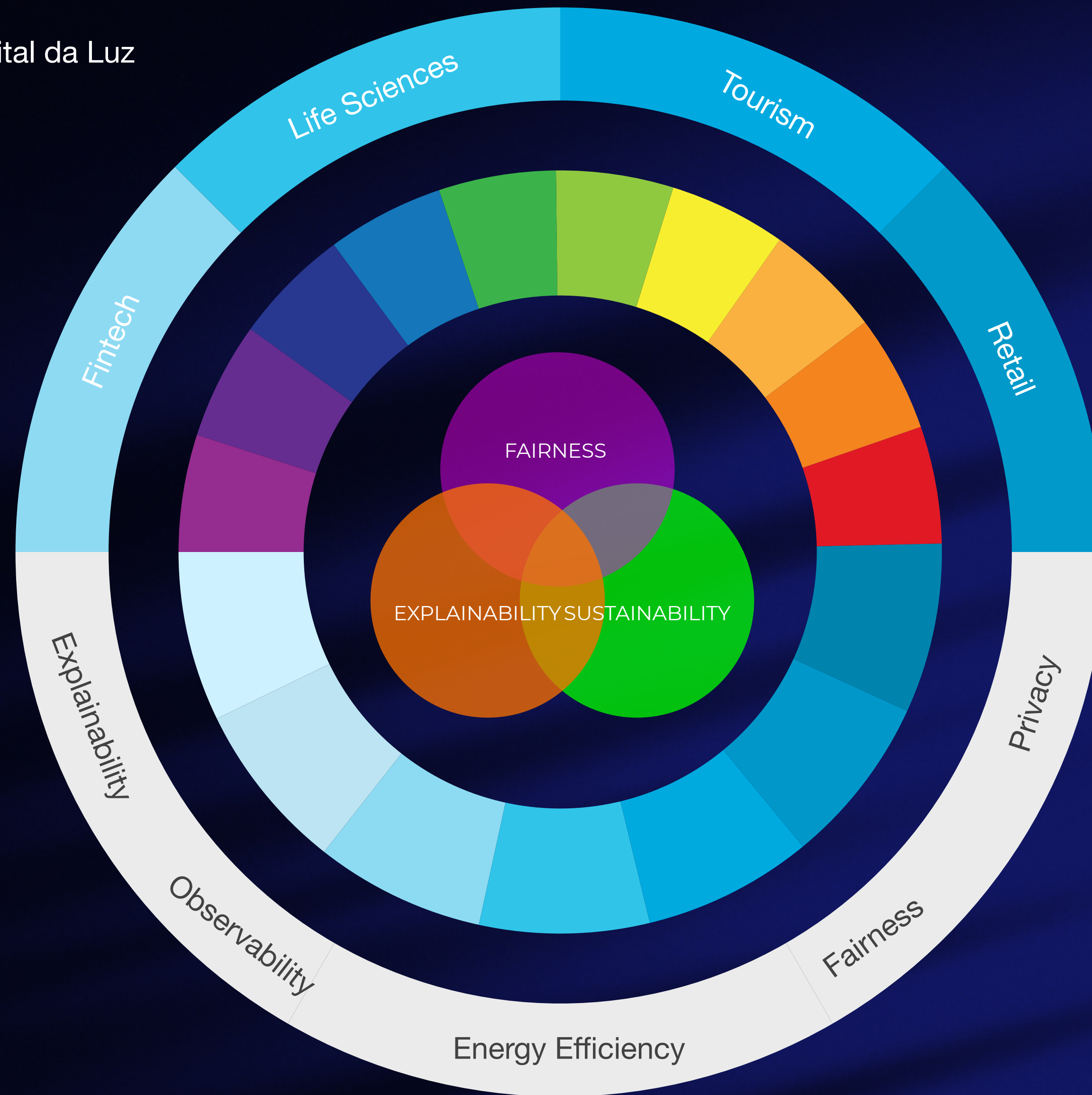


Market  
.....  
AI Research



# The Consortium

- Feedzai
- BIAL, Hospital de São João, Hospital da Luz
- Pestana Group
- SONAE
- Automaise
- Emotai
- NeuralShift
- Priberam
- Sword Health
- Unbabel
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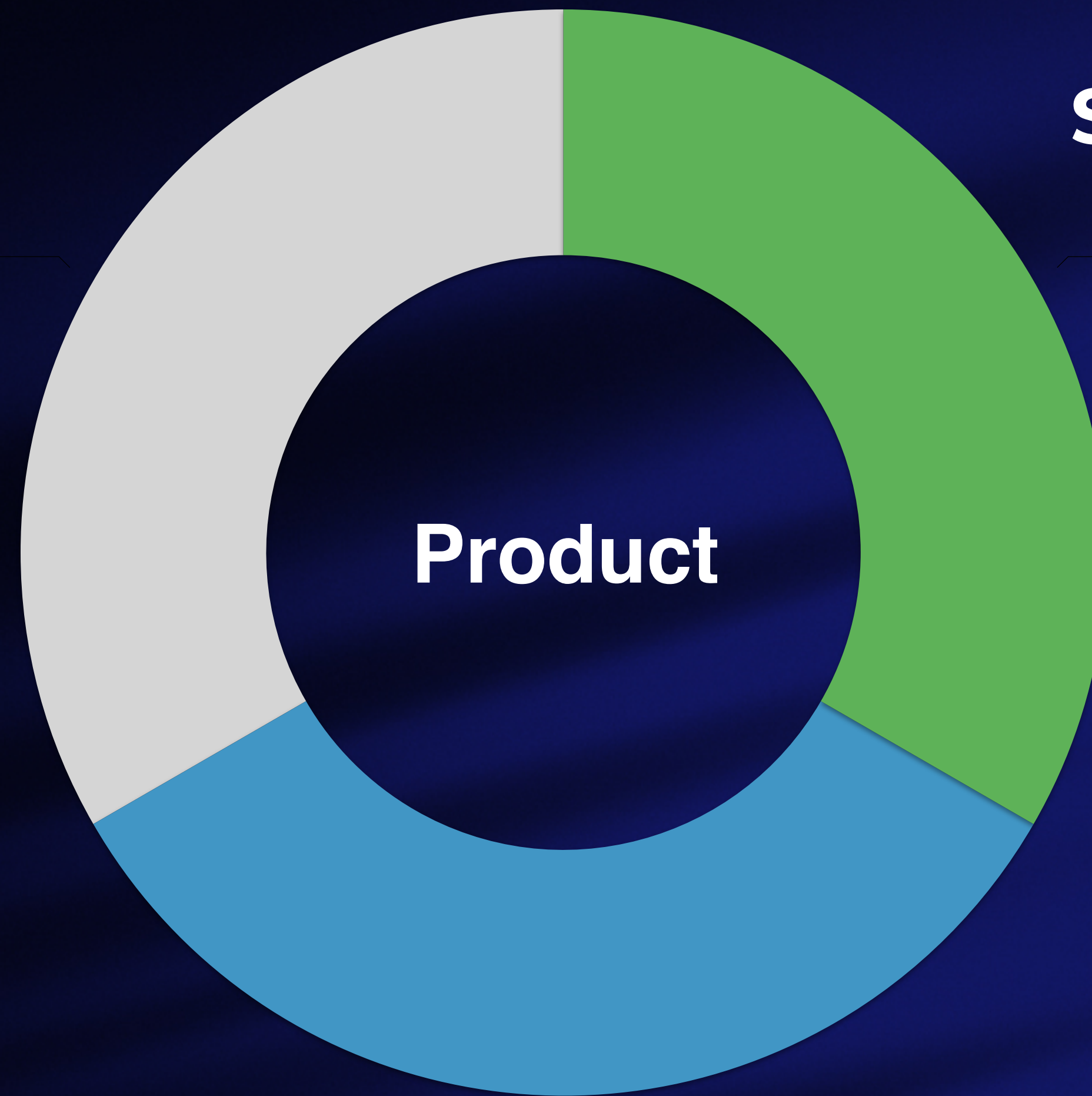
Market  
AI Research



# Innovation Model — Product Pods

**Real world problems**

Industry Leader



**Product-centric  
Sense of urgency**

Startup

**Collaborative  
Research**

Research  
Center





Center for Responsible AI

18

Products  
Responsible AI





Increase efficiency  
and trust of hospital  
discharges.

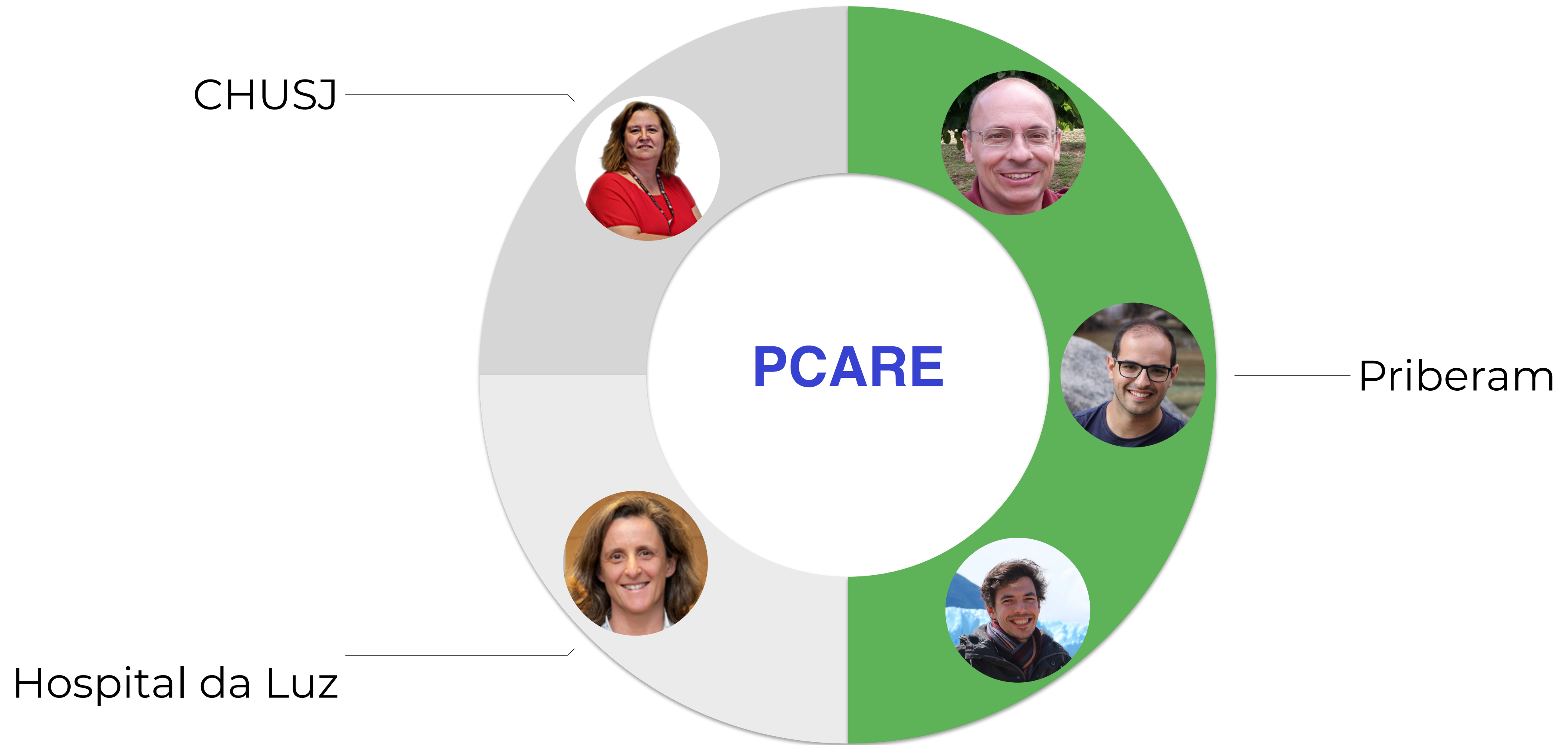


Center for Responsible AI





# PCARE Product Pod





# ClickCode

 1020213112

INT 

Find





**Physical therapy  
without barriers  
for everyone.**





# Sword AI Telerehabilitation Product Pod











**Help patients with ALS to  
restore the communication  
with their families.**



**SÃO JOÃO**  
PORTO

FACULDADE DE MEDICINA-HOSPITAL S. JOÃO







21:47 | DIRETO

**INTELIGÊNCIA ARTIFICIAL**

**Jornal**  
da Noite

**TECNOLOGIA DÁ VOZ A QUEM NÃO COMUNICA**



SIC



21:49 | DIRETO

**INTELIGÊNCIA ARTIFICIAL**

**Jornal**  
da Noite

**RESPOSTAS SÃO GERADAS PARA O UTILIZADOR**





Obrigado.  
Thank you.  
ありがとう

Paulo Dimas

パウロ・ディマシュ

VP of Product Innovation

[pdimas@unbabel.com](mailto:pdimas@unbabel.com)

 [paulodimas](#)











