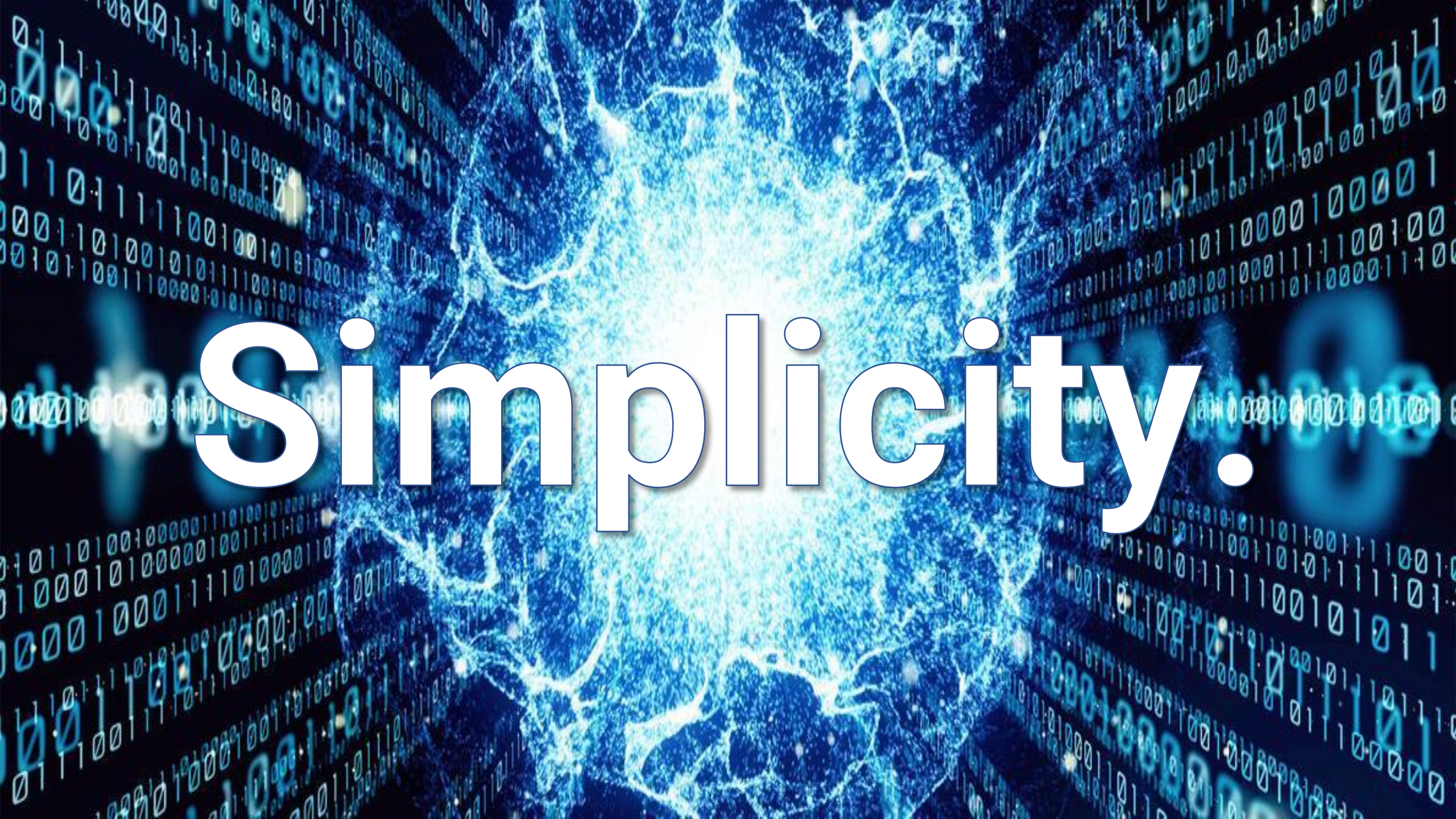
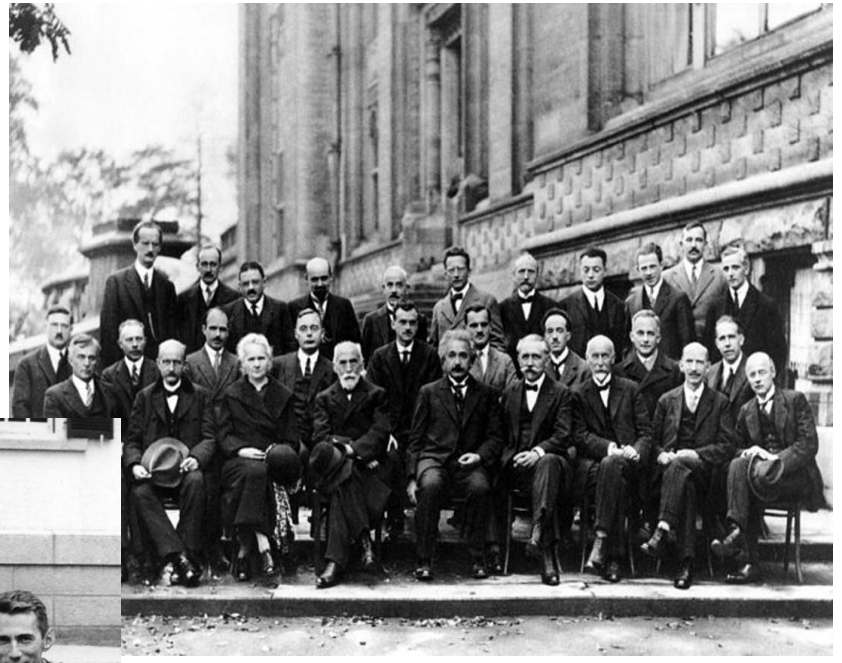

Application of
Artificial Intelligence
to Environmental Issues


Simplicity.

The Greatest Conferences of All Time

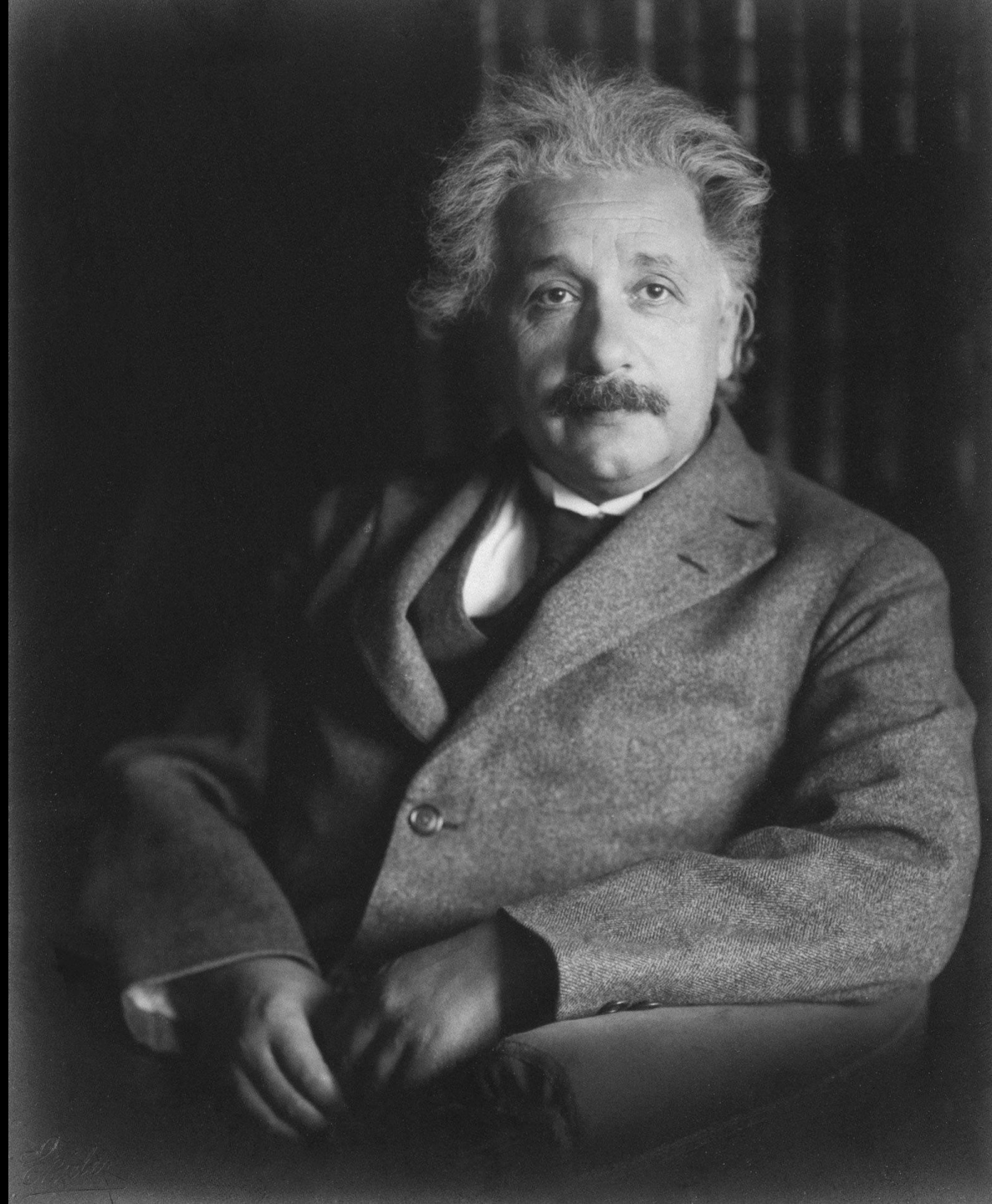
- Solvay 1927 (Quantum)
- Dartmouth 1956 (AI)
- Endicott House 1981 (Quantum Computing)

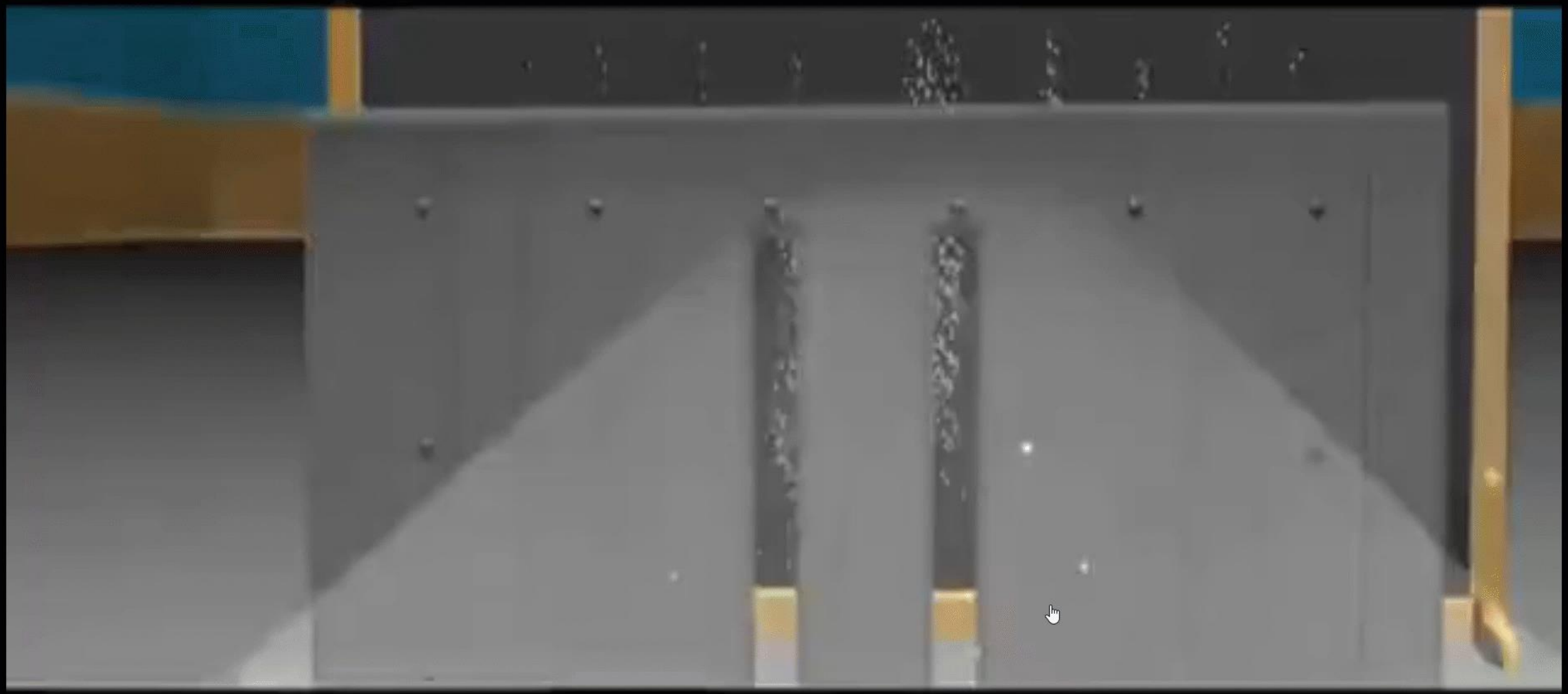


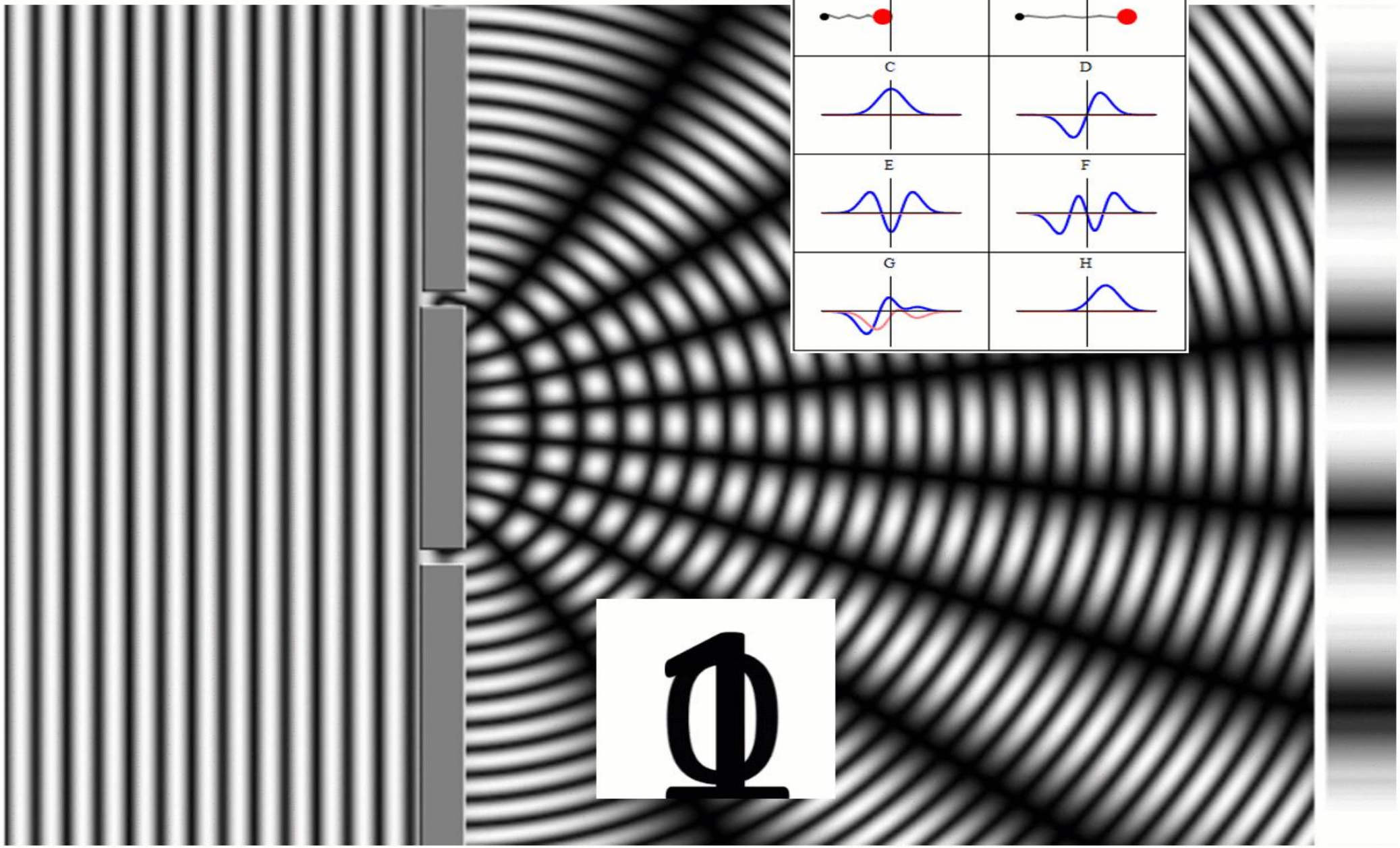
---“Everything we call real is made of things that cannot be regarded as real.”--Niels Bohr

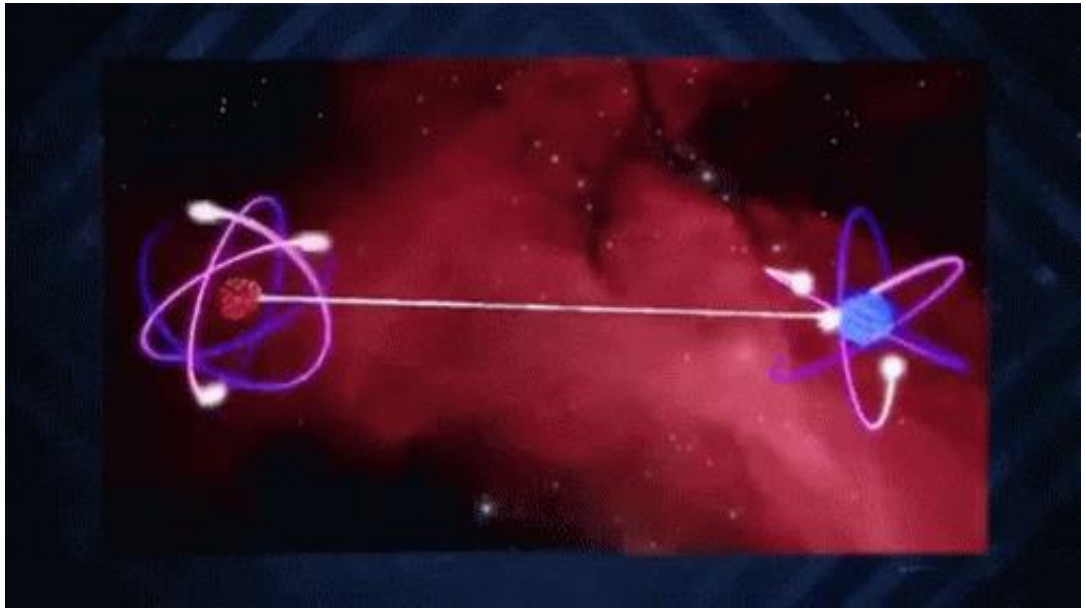
—“Spooky action at a distance.”

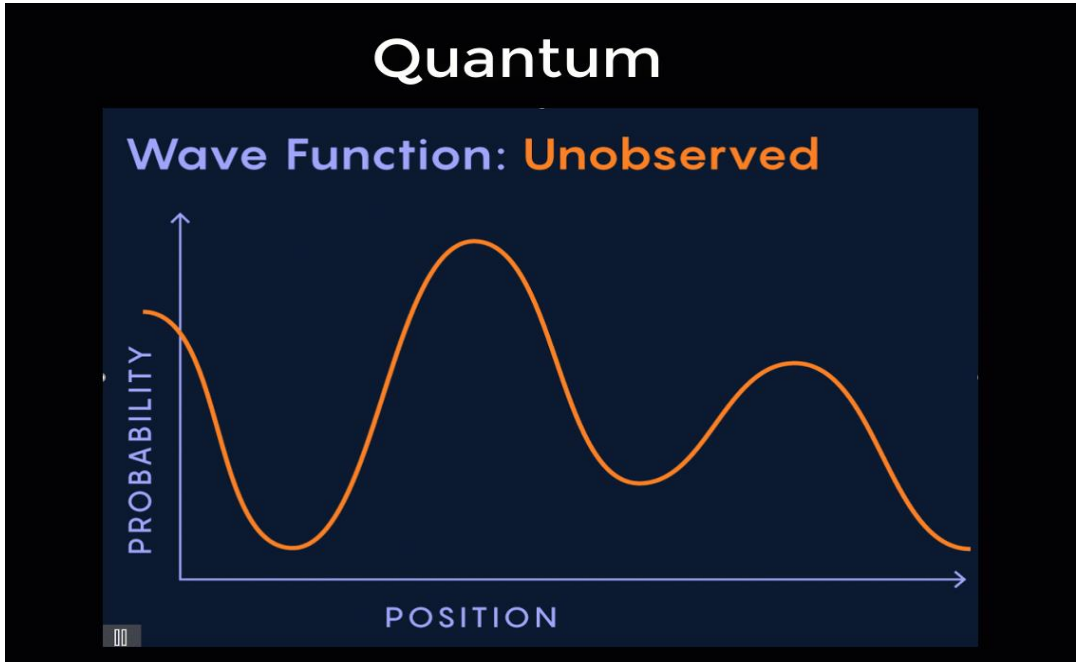
—Albert Einstein





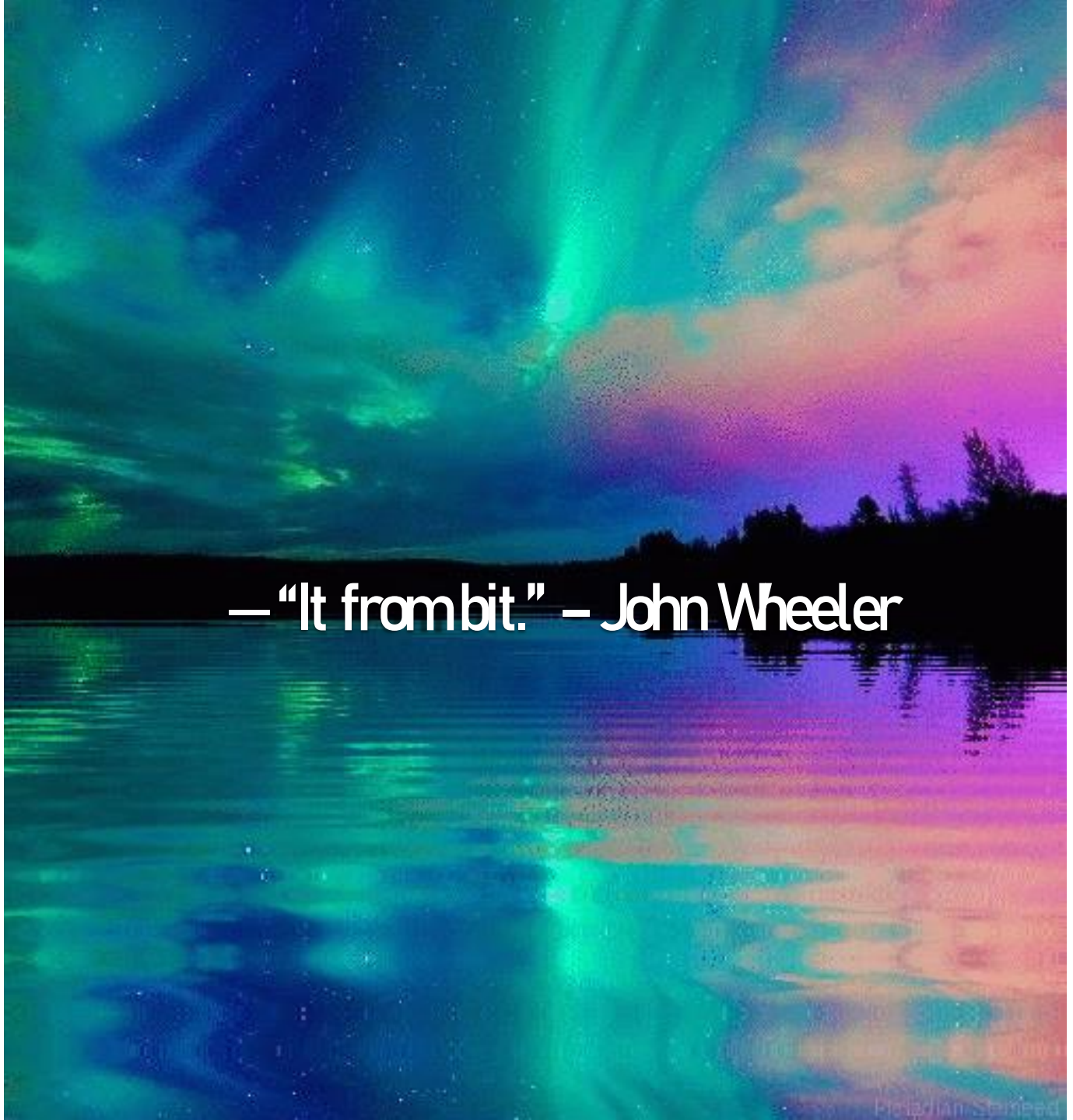

A
B
C
D
E
F
G
H

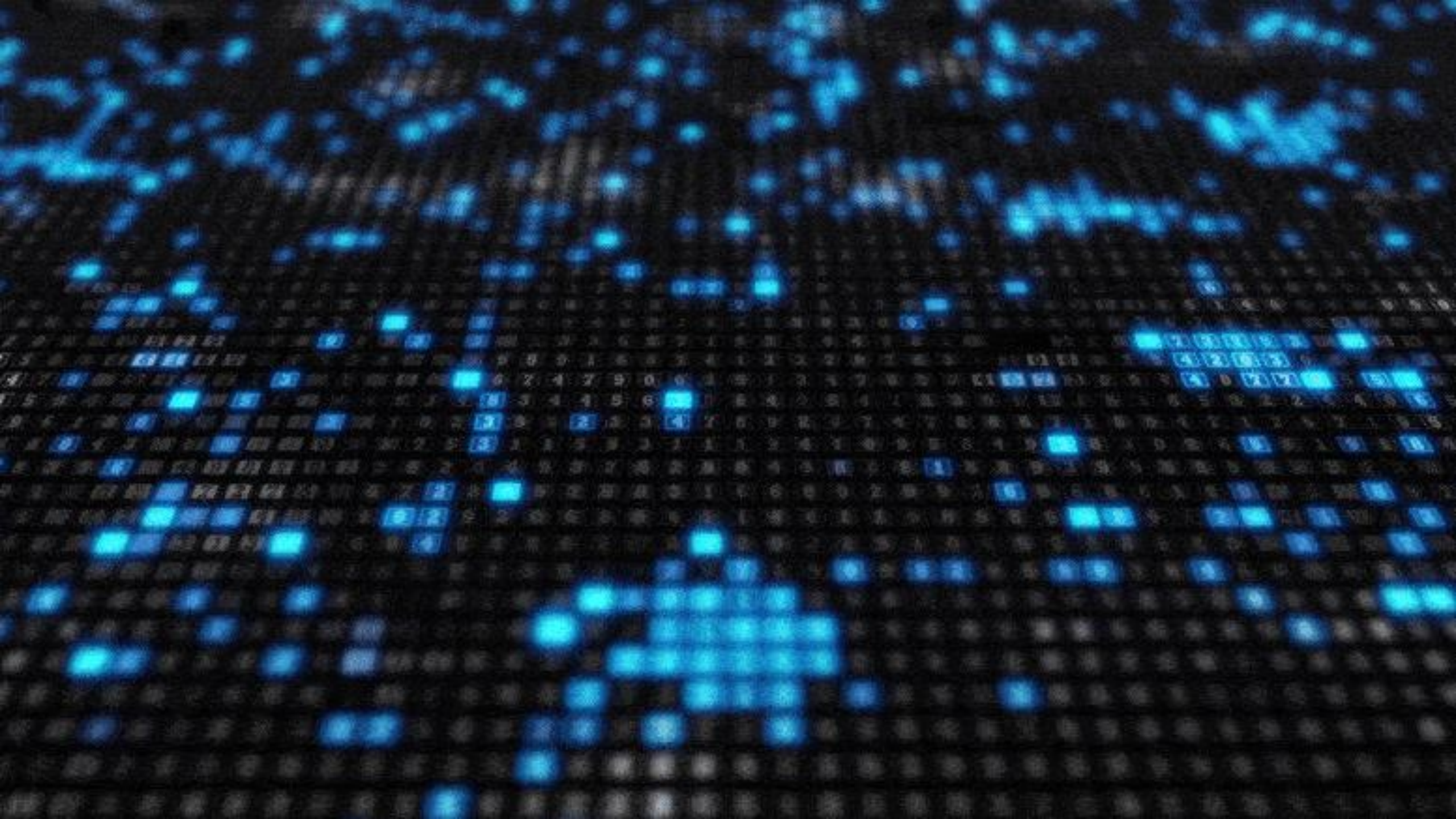



Quantum
Wave Function: Unobserved
PROBABILITY
POSITION

COMPUTATION


Yes/No


— “It from bit.” – John Wheeler



Nature = Simple Equations

$$E=MC^2$$

```
RulePlot[C
```

Quantum Data

Classical Data
(binary computer)

01001010010101
10101101110000
10011110000111
10101011111000
01010111100011
01010101010101
11010110101011

Biological Data

ACTGACTGACTTAGG
ATTCGAGATCCATTC
CTTGAGACCTTTTTT
ACCCCTATAGCATCA
TTCCAGGATCTATTAT
CCTATATATAGGGGC
CCATATAAATGGGCT

Human Data

Language data (letters), sensory data (visual images), numeric data (numbers)

All at some level is data.

HUMAN COMPUTING

Super Molecular Computing
(ex/ silicon microchip)

Molecular Computing
(ex/ DNA)

Atomic Computing

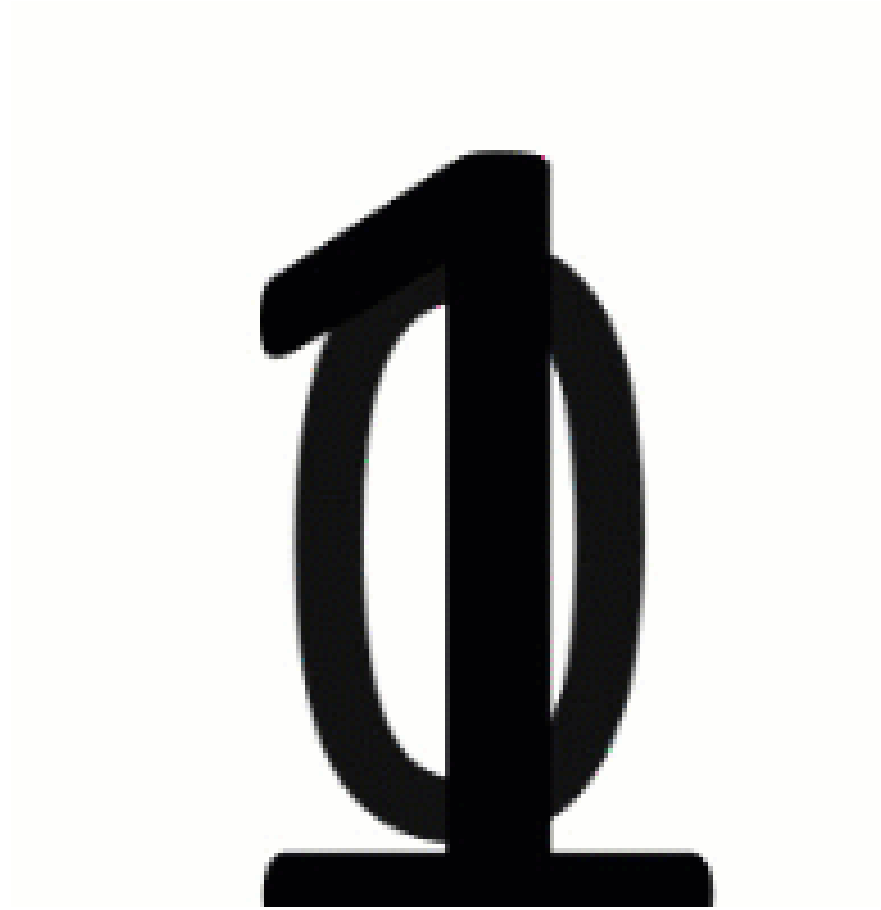
Subatomic Computing
(ex/ quantum computing)

Classical Digital Computer

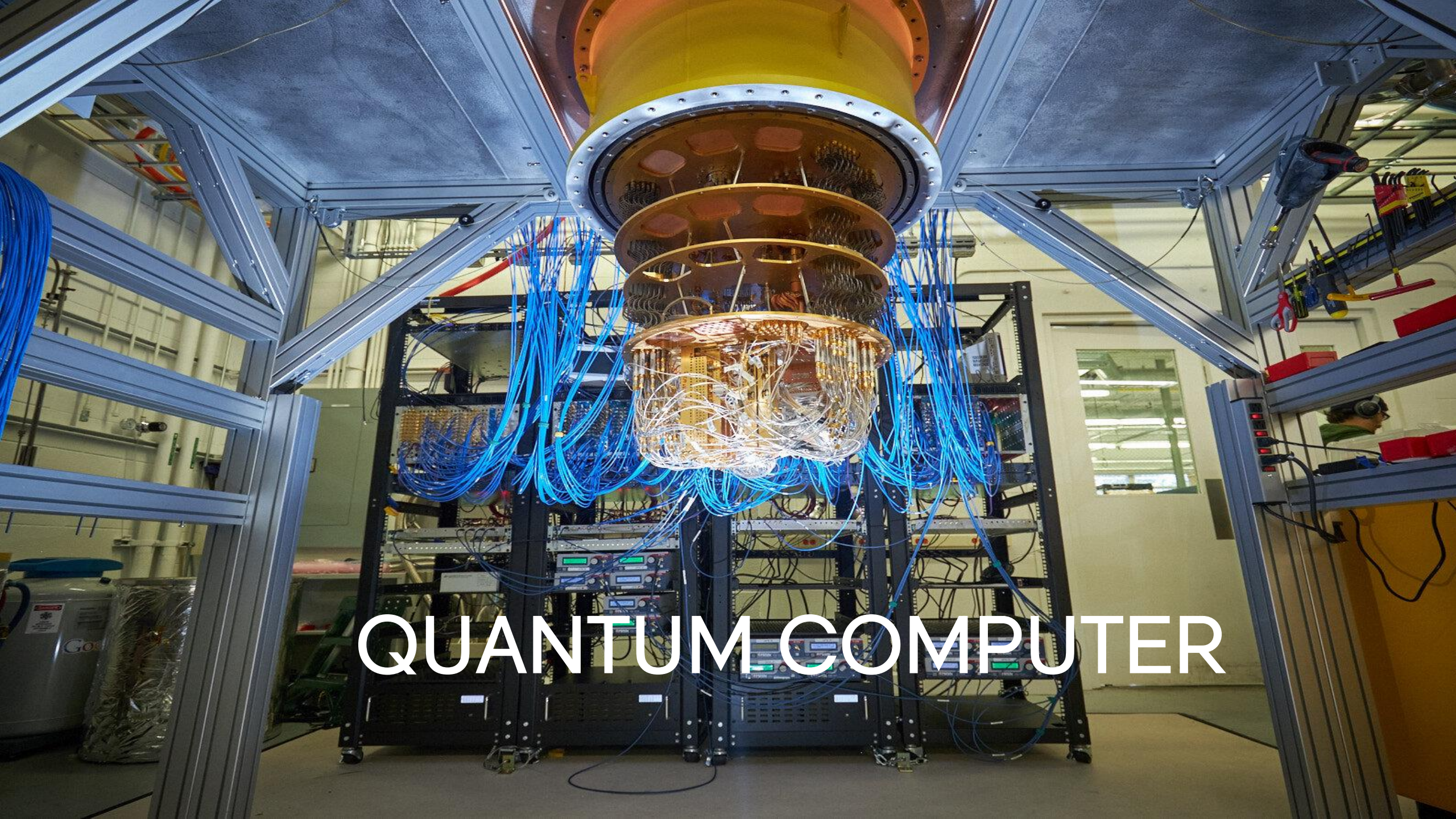
0 or **1**

(no) (yes)

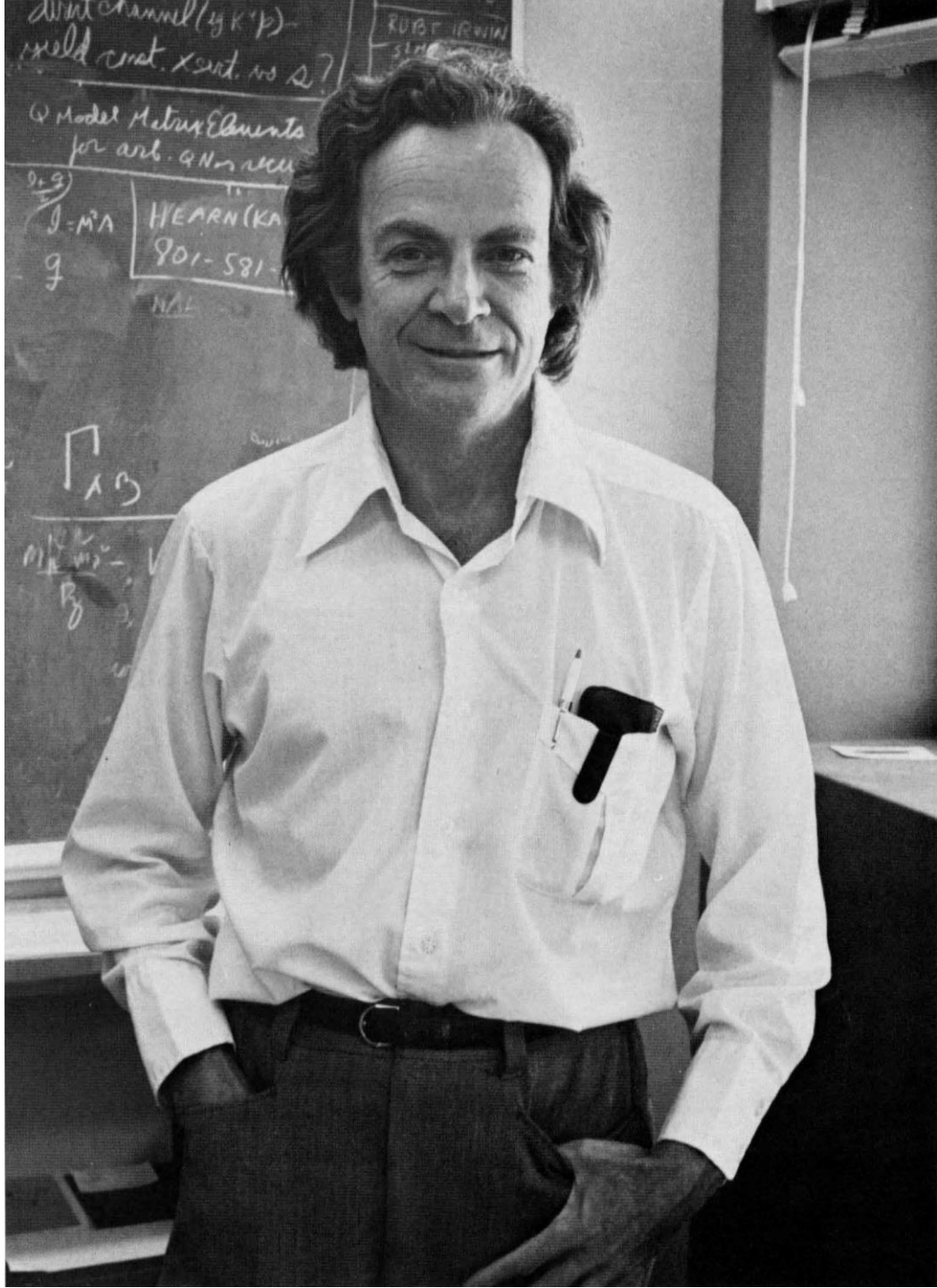
Quantum Computer

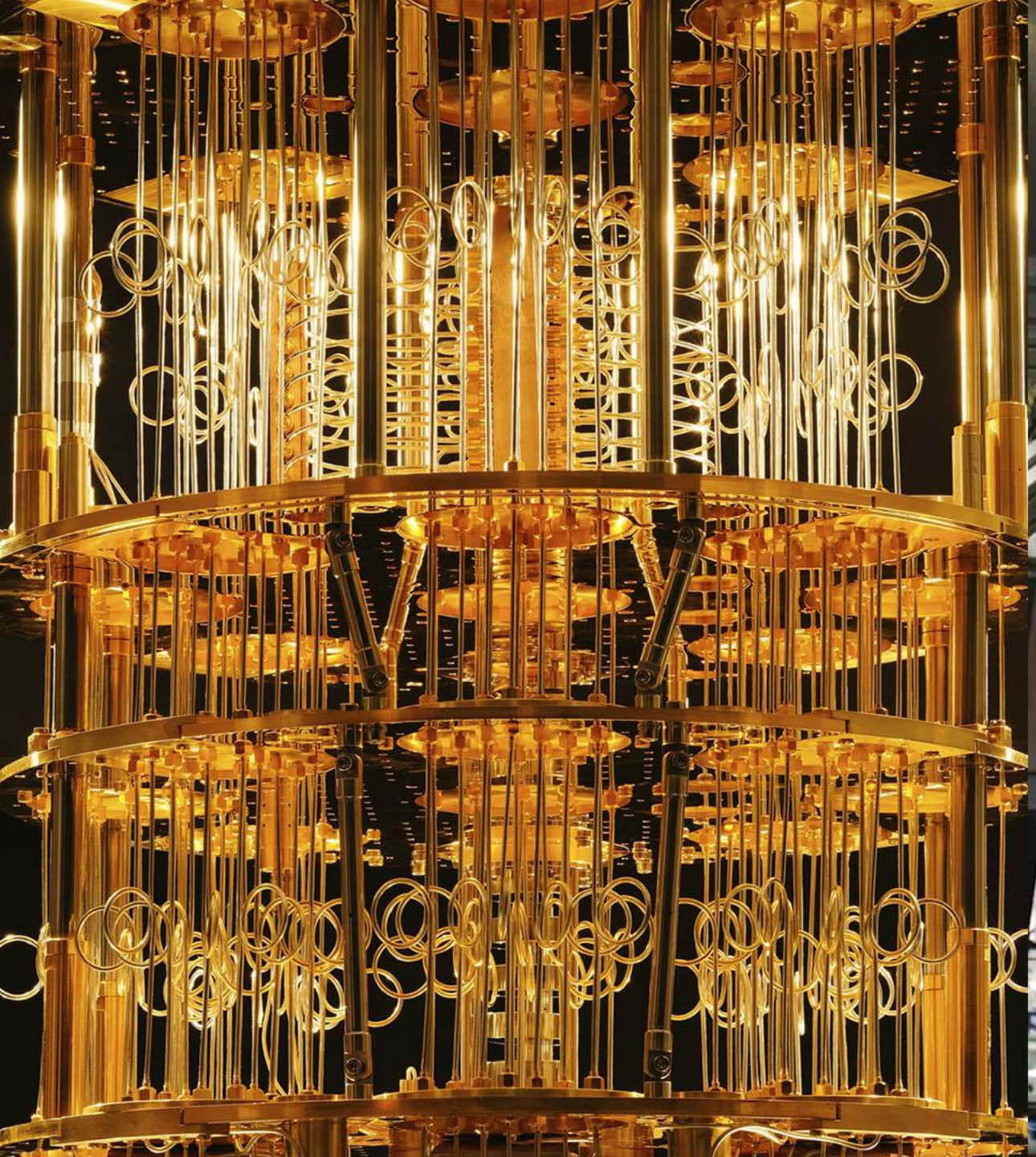


(yes/no)


QUANTUM COMPUTER

---“**Nature isn't classical, dammit,** and if you want to make a simulation of nature, **you'd better make it quantum mechanical**.” --Richard Feynman






IBM Q

Harvard Business Review

TECHNOLOGY

Are You Ready for the Quantum Computing Revolution?

by Shohini Ghose

September 17, 2020

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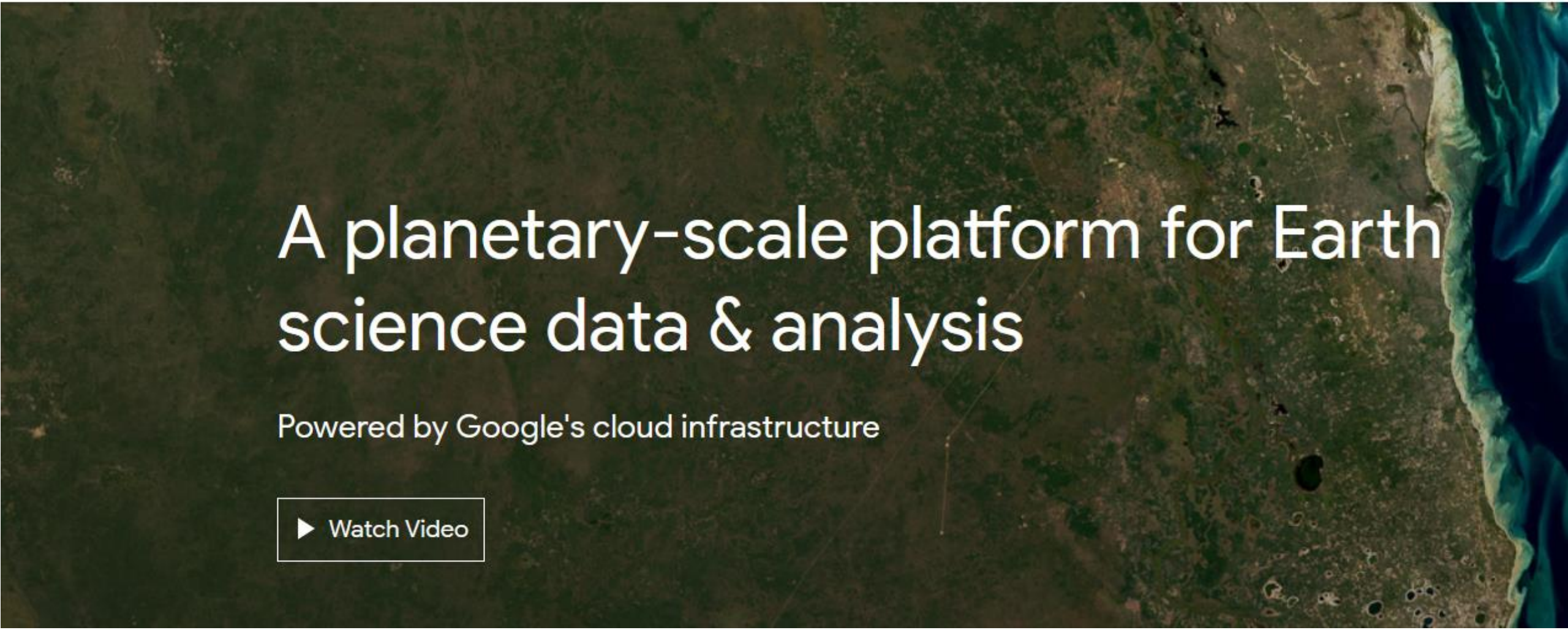
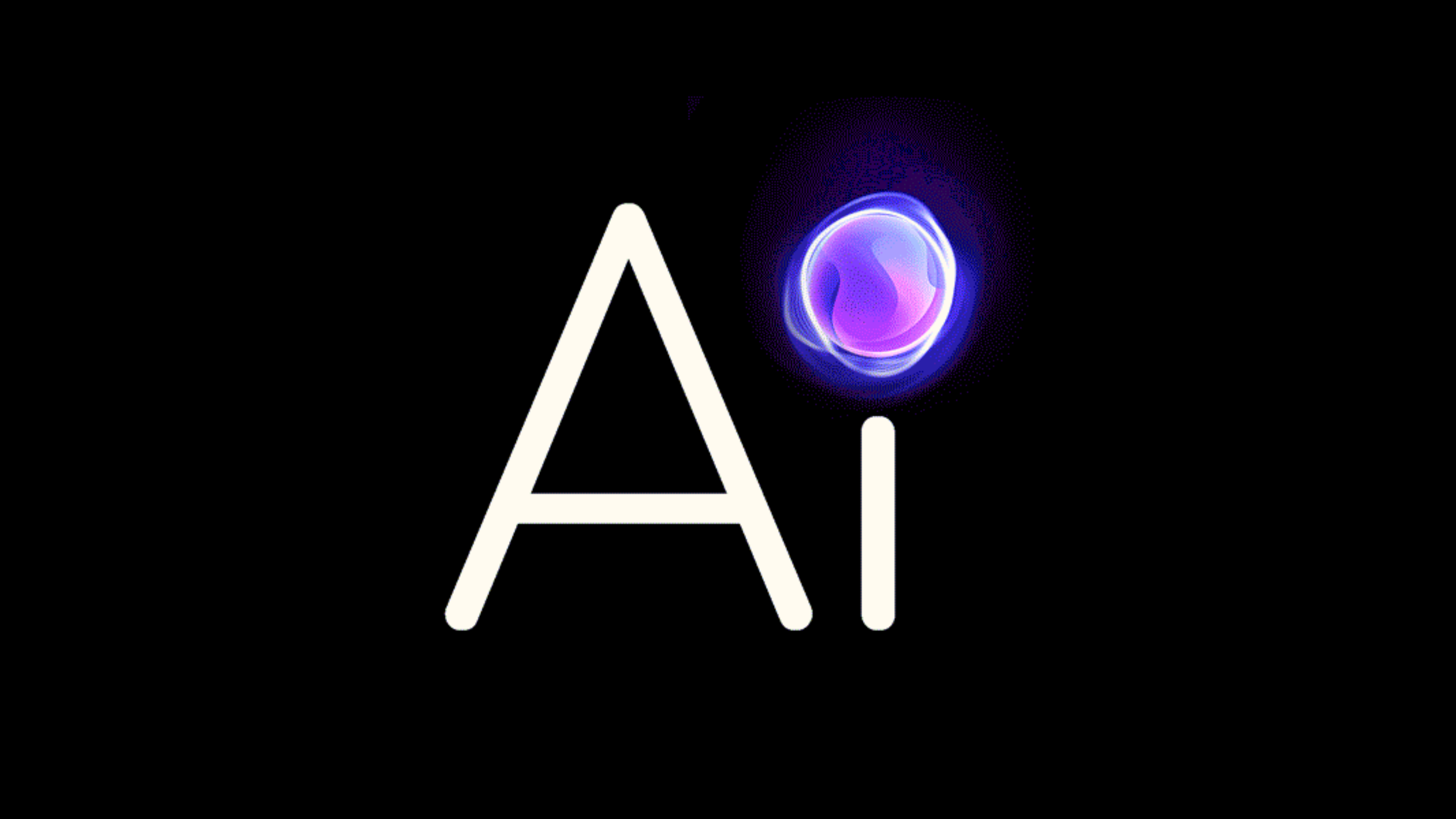
The Enduring Promise of Planetary Computing_
Microsoft

Google Earth Engine

Datasets

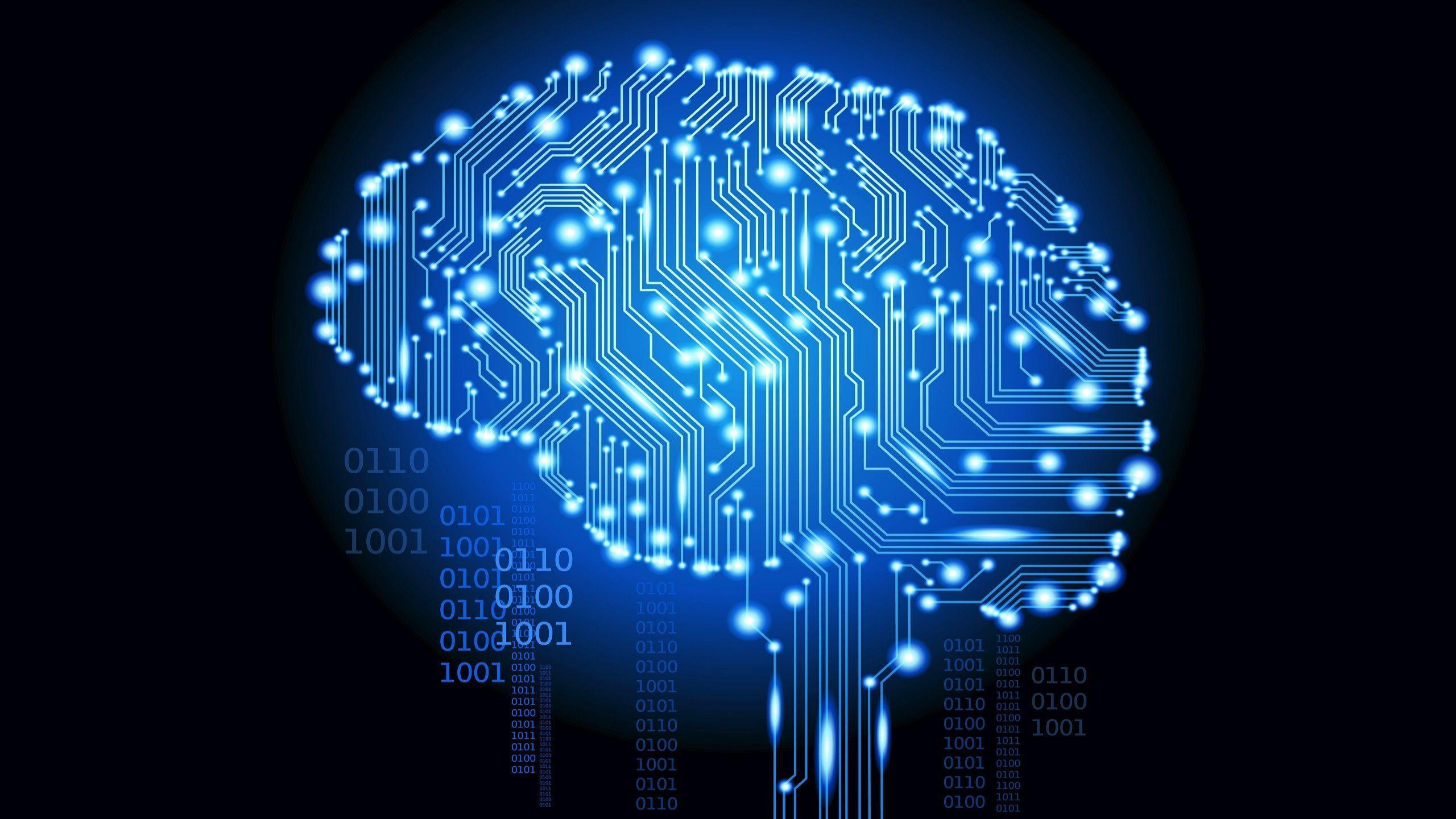


ARTIFICIAL INTELLIGENCE

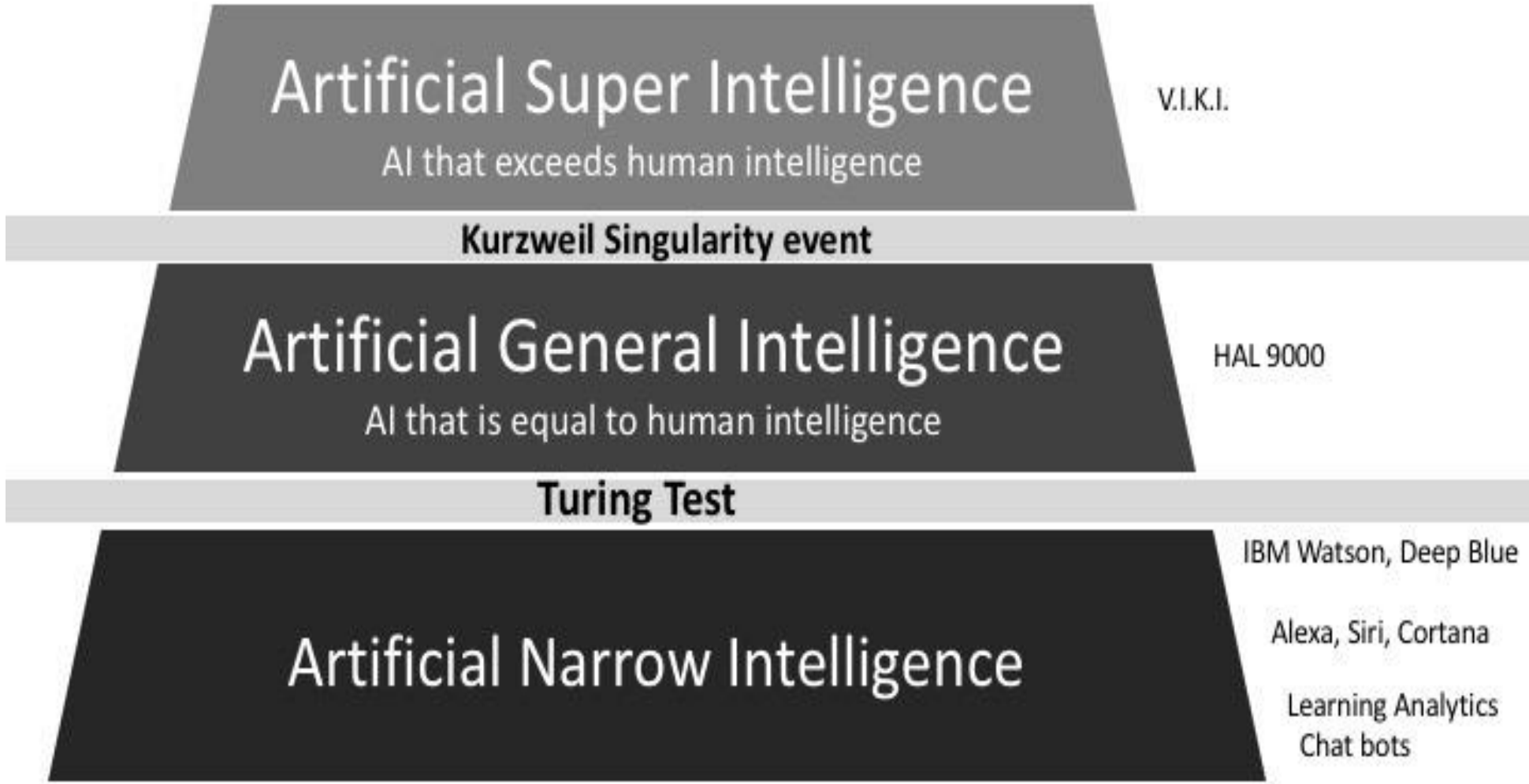

Ai

“AI is more profound than fire, electricity, or the internet.”

–Google CEO, Sundar Pichai

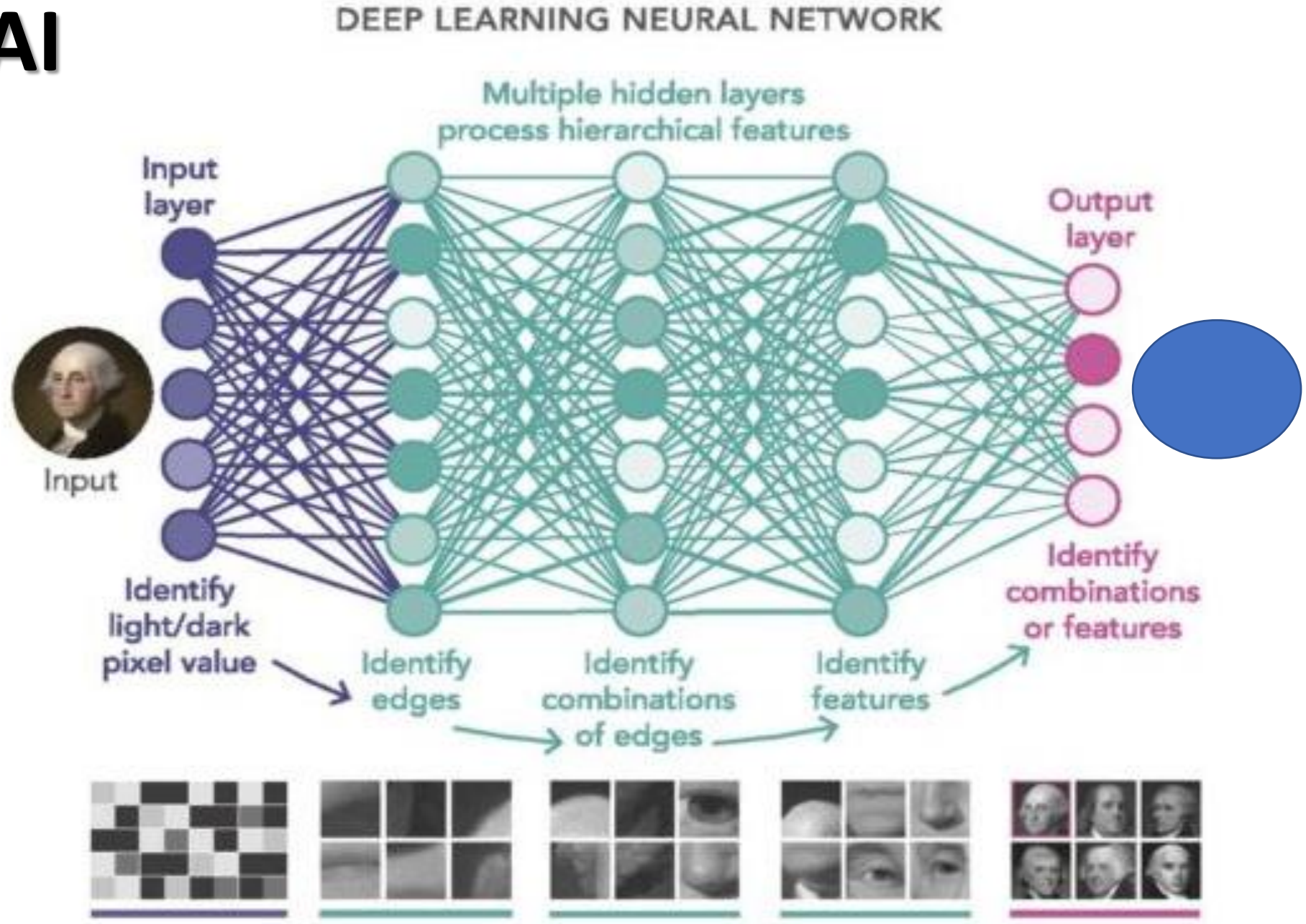


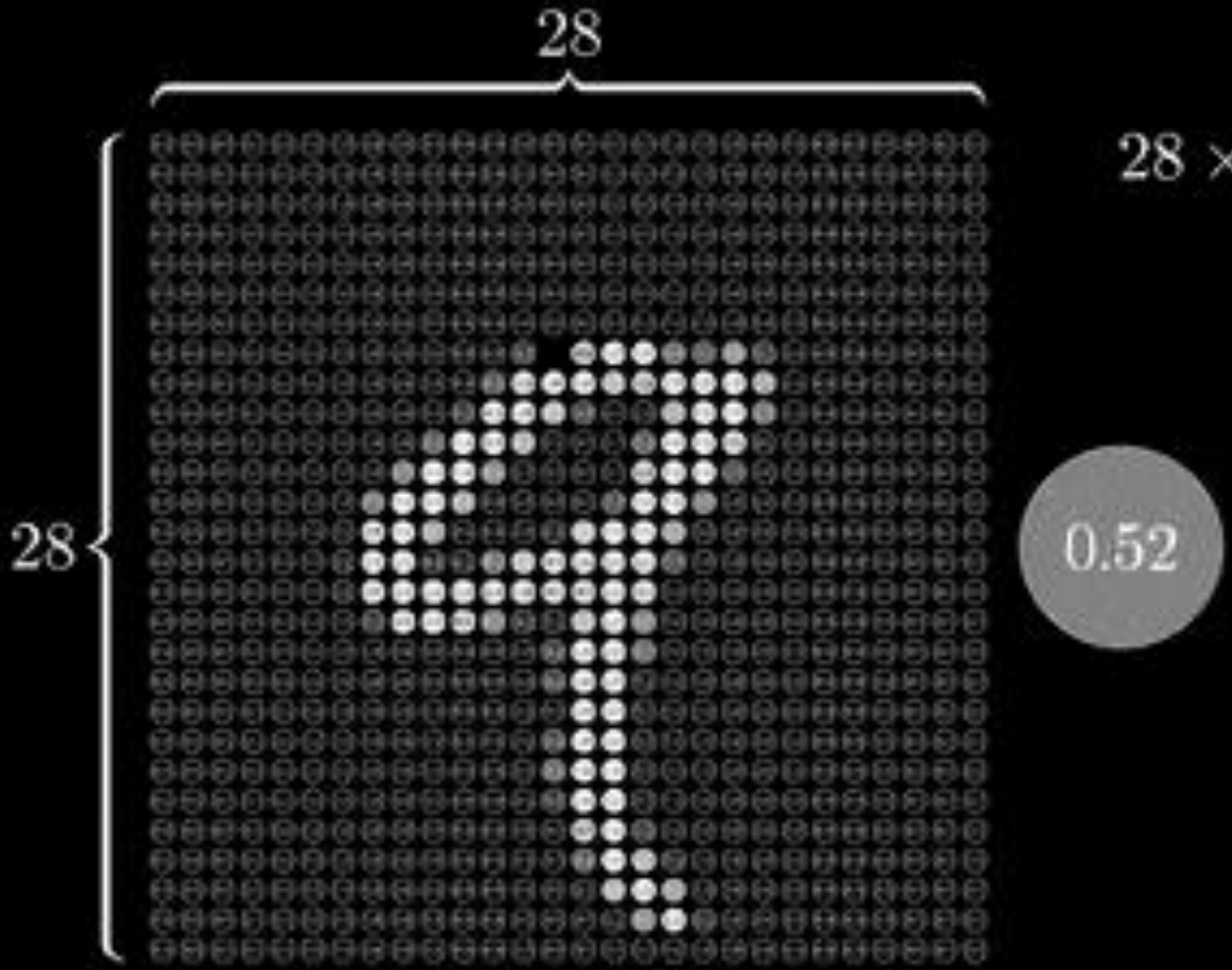
Levels of Artificial Intelligence



Graphic concept by Steve Wheeler (2019) - adapted from various sources

1. VISION AI

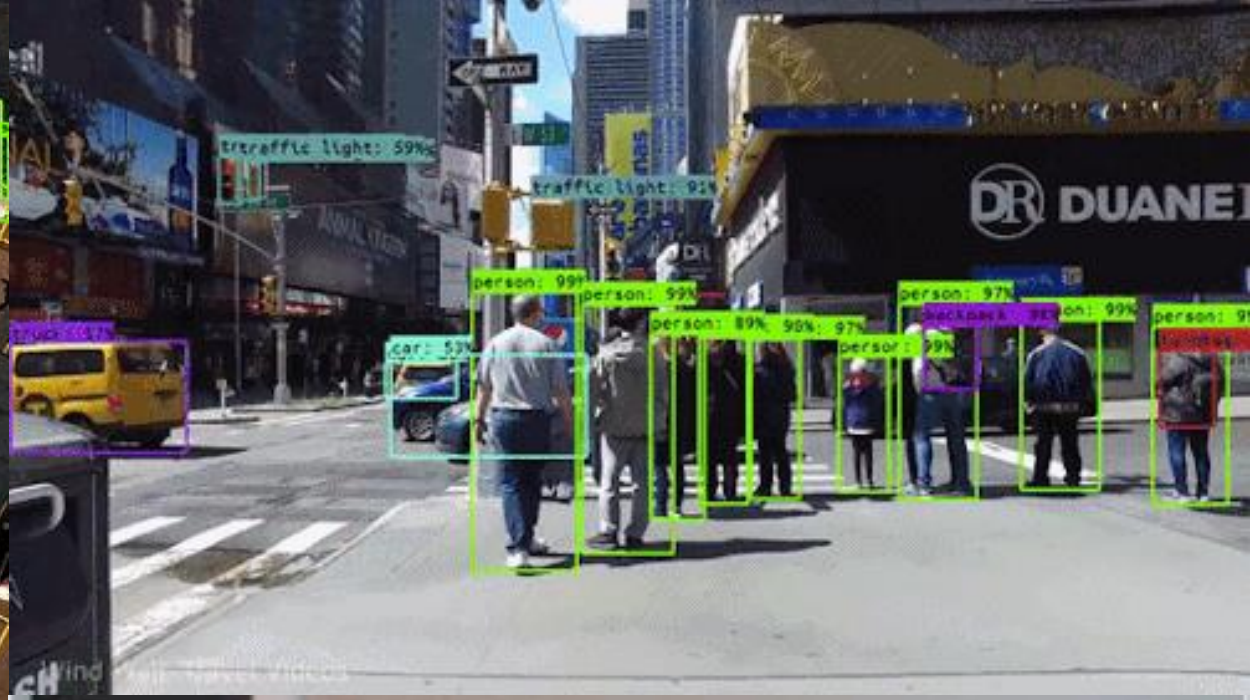

DEEP LEARNING NEURAL NETWORK
Multiple hidden layers
process hierarchical features
Input
layer
Output
layer
Input
Identify
light/dark
pixel value
Identify
edges
Identify
combinations
of edges
Identify
features
Identify
combinations
or features

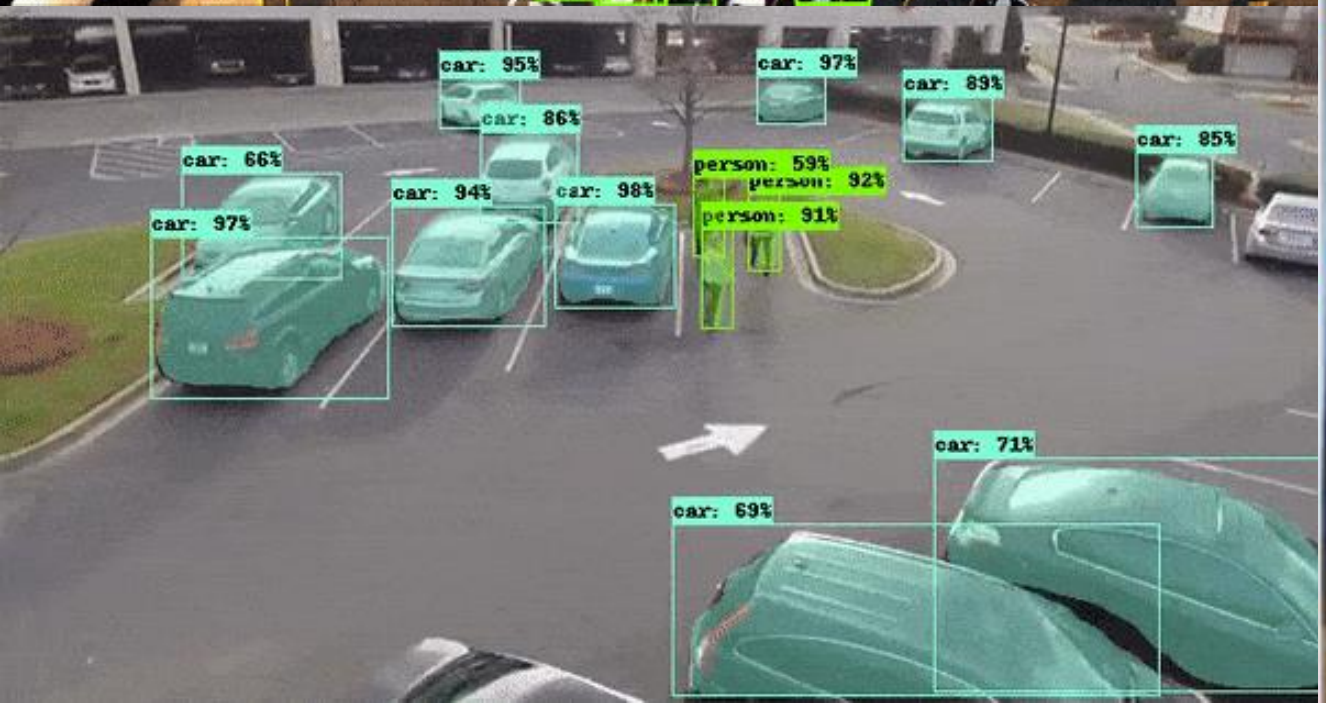


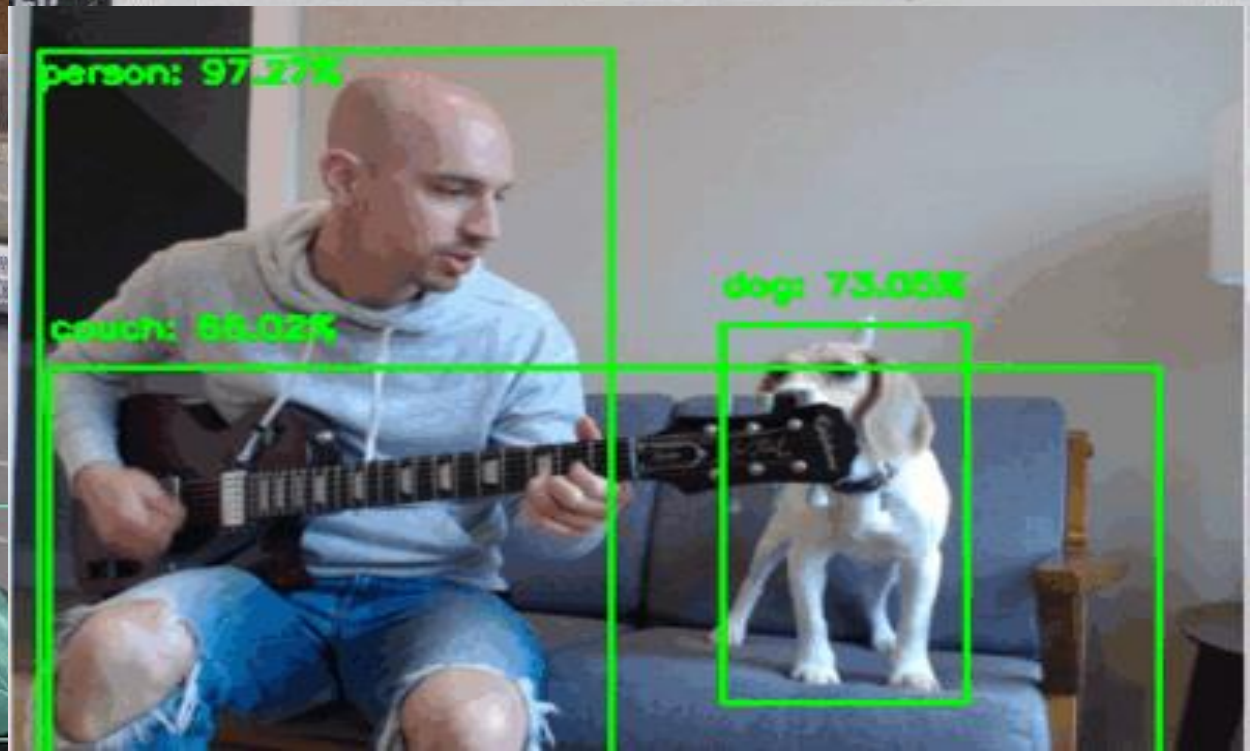
$$28 \times 28 = 784$$

0.52


STOP

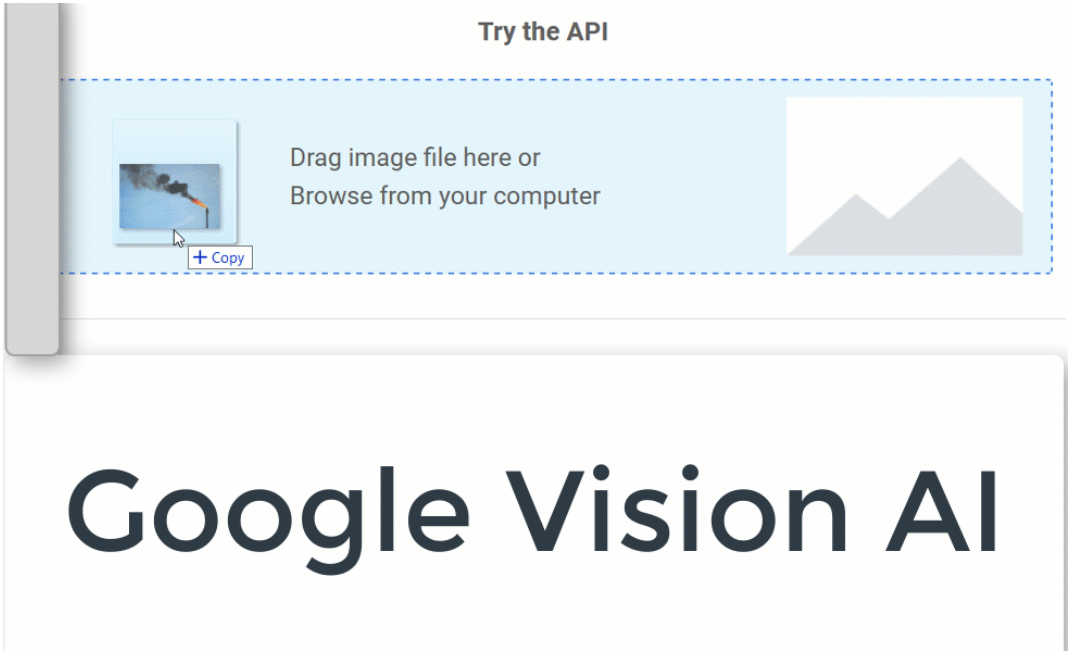

traffic light: 59%
person: 99%
person: 99%
person: 89%
person: 97%
car: 53%

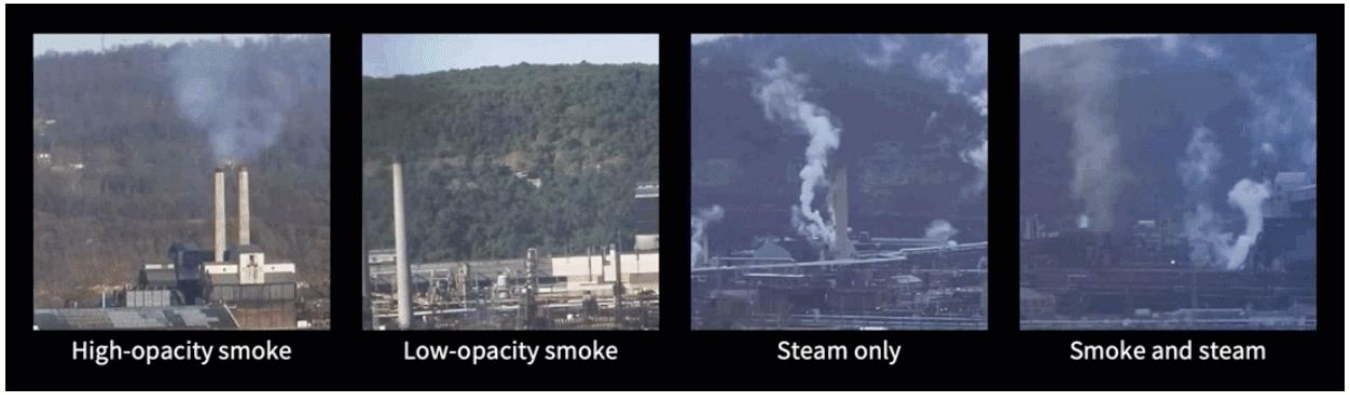

car: 95%
car: 97%
car: 89%
car: 86%
car: 66%
car: 85%
person: 59%
person: 92%
car: 94%
car: 98%
car: 97%
person: 91%
car: 71%
car: 69%

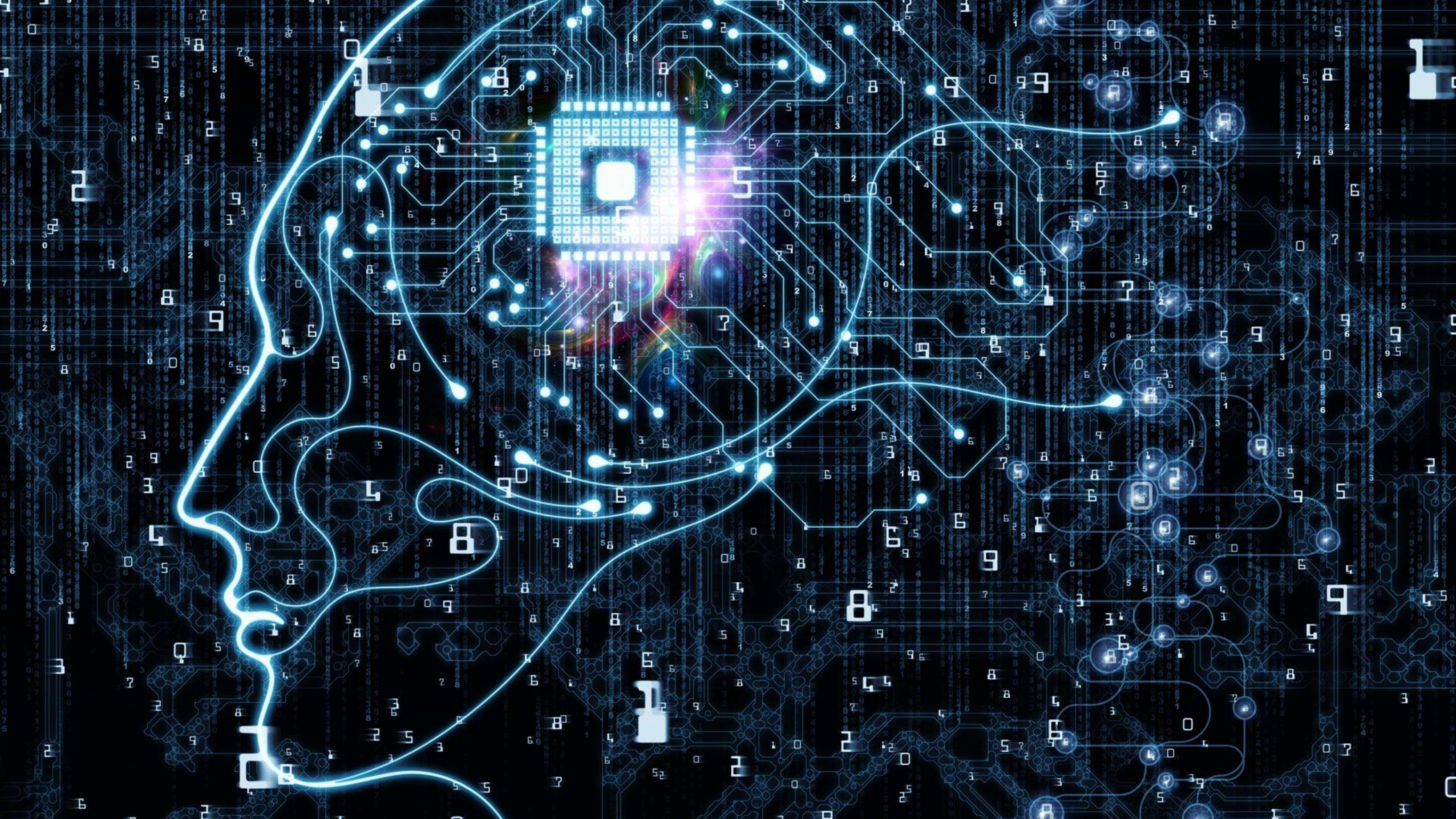

person: 97%
couch: 88.02%
dog: 75.05%


STOP
Lane Change: RIGHT
NL(0.00), E(1.00), F(0.00), TF(0.00), S(0.00)
NRW: FLP(0.00), FRP(0.00)
+0.0000 AUTO_HIGH_BEAM
+0.0000 BLINDED
+0.0000 RAINING
+0.0000 TIRE_SPRAY
+0.0001 WET_ROAD
0.0000 CONTROLLED_ACCESS
MAIN –

Identifying Pollution

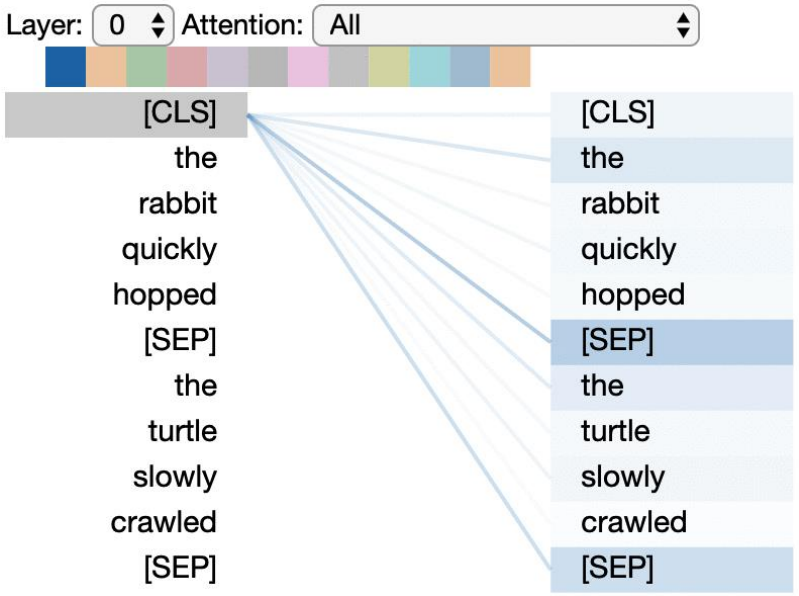


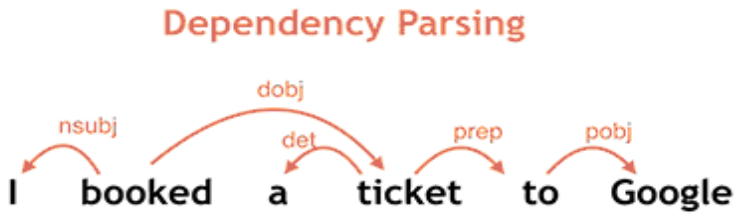




2. NLP

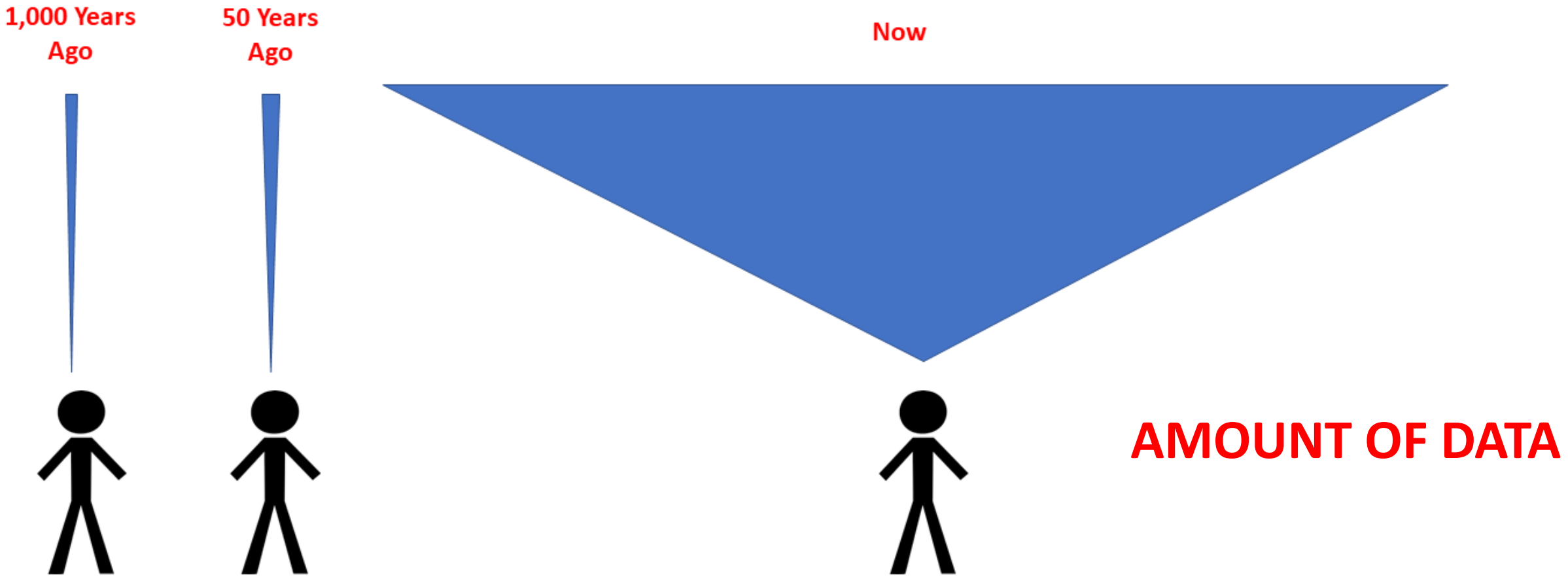
Natural Language Processing






1100

3. Analyzing and Filtering Data using AI



BUILDING A QUANTUM AI ENVIRONMENTAL PROTECTION SYSTEM


Enviro.AI
TM

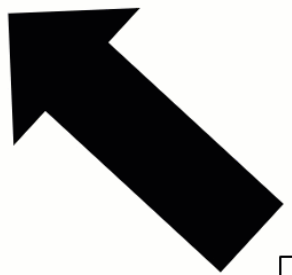
Quantum

Classical

011000100100100
010010010010101
010100101110011
010011100100101
110100010001001
010010101110100
010101101010100

Human

Language data, visual data, numeric data.

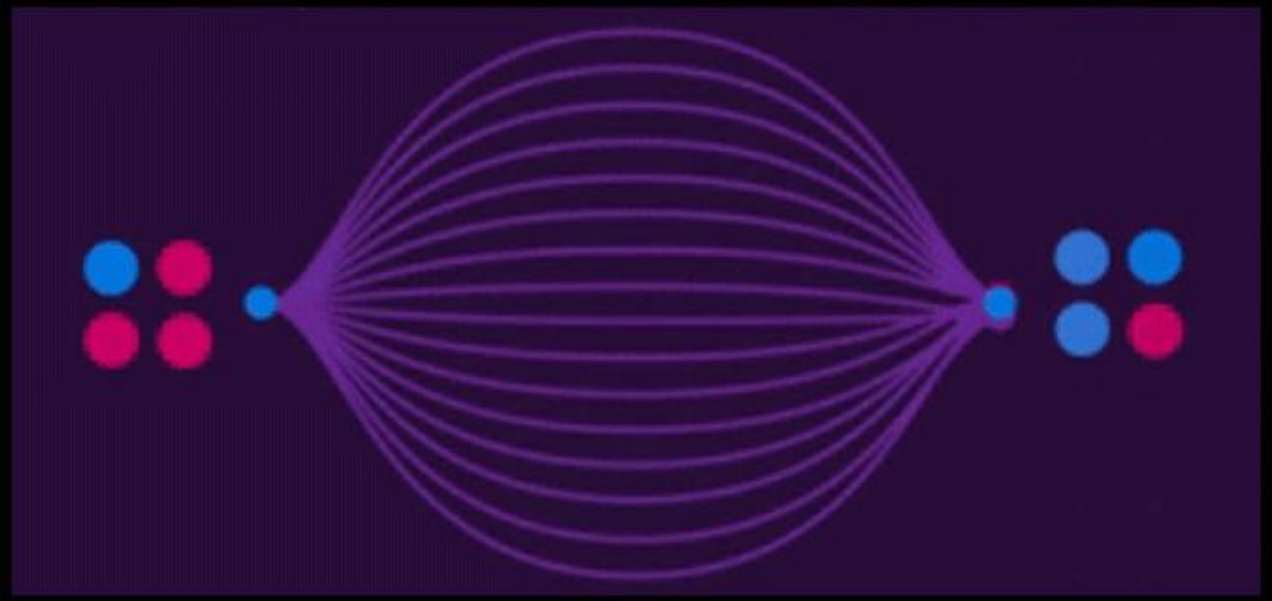


The key to protecting nature is to develop a system that, as much as possible, communicates and interacts with nature how nature communicates and interacts with nature. It's simpler.

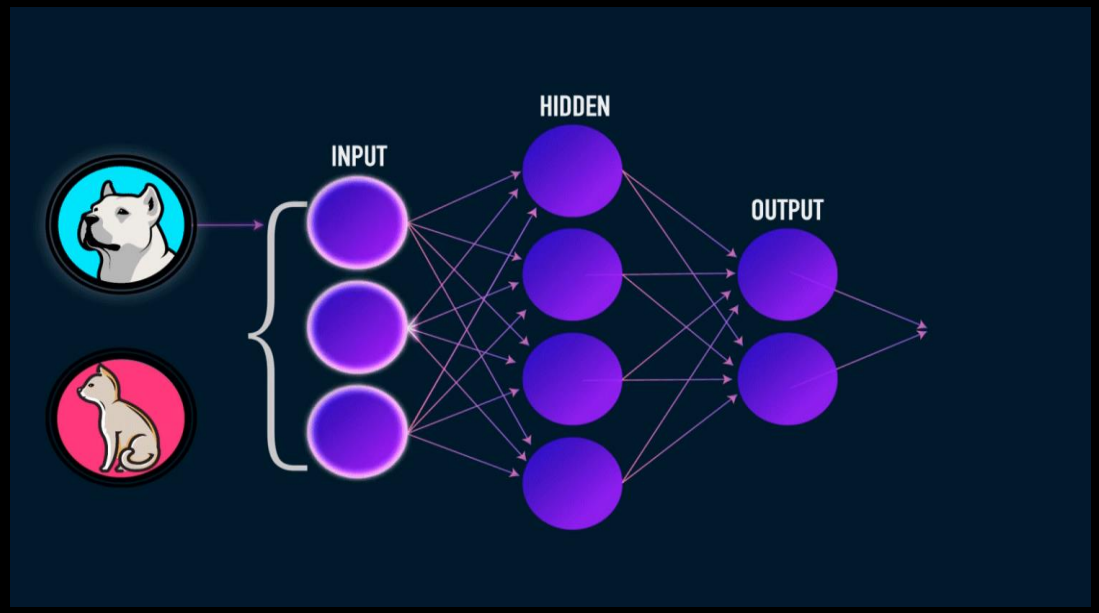
HARNESS PROBABILITY.

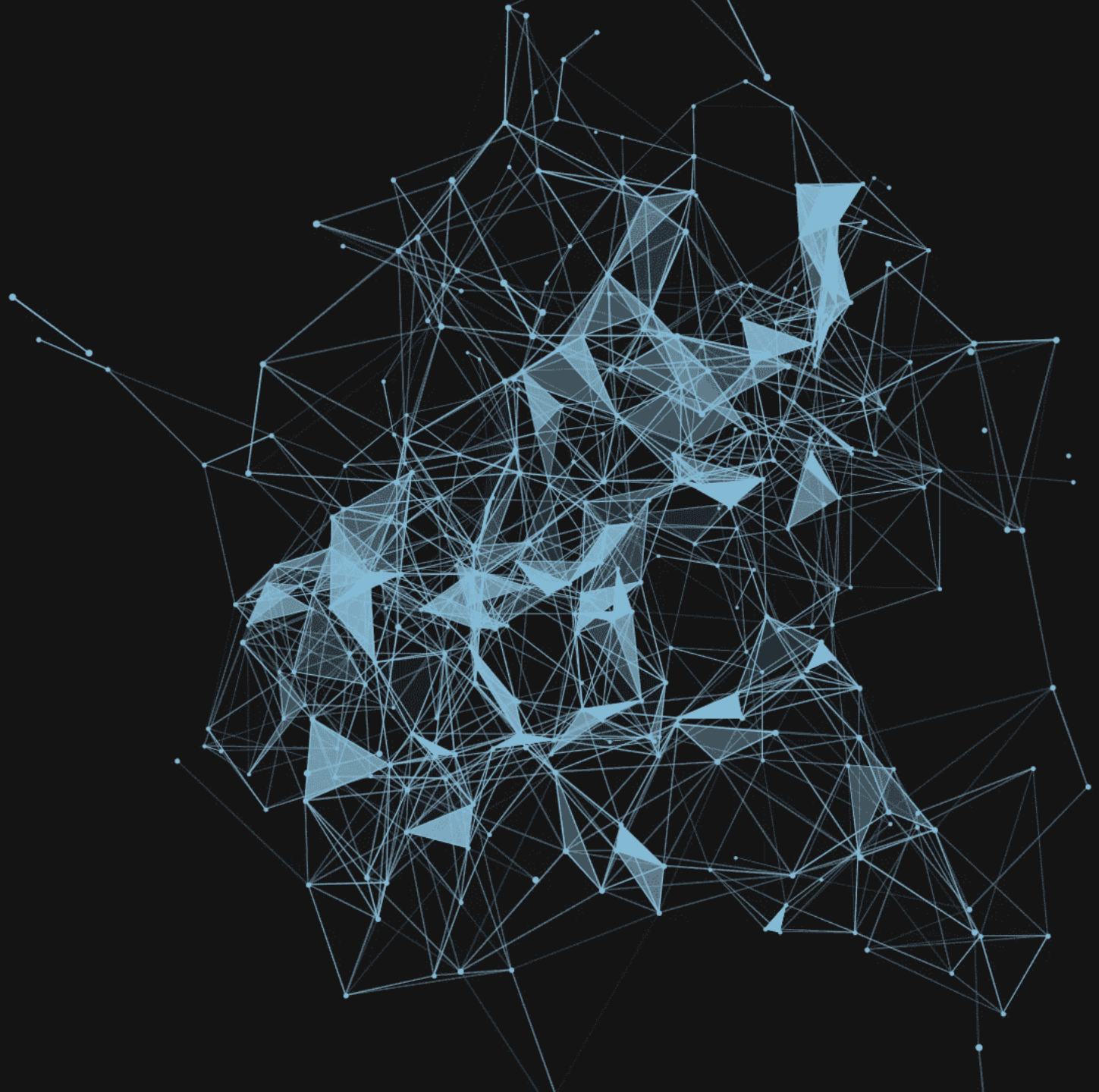
Enviro.AI™

Quantum Computing

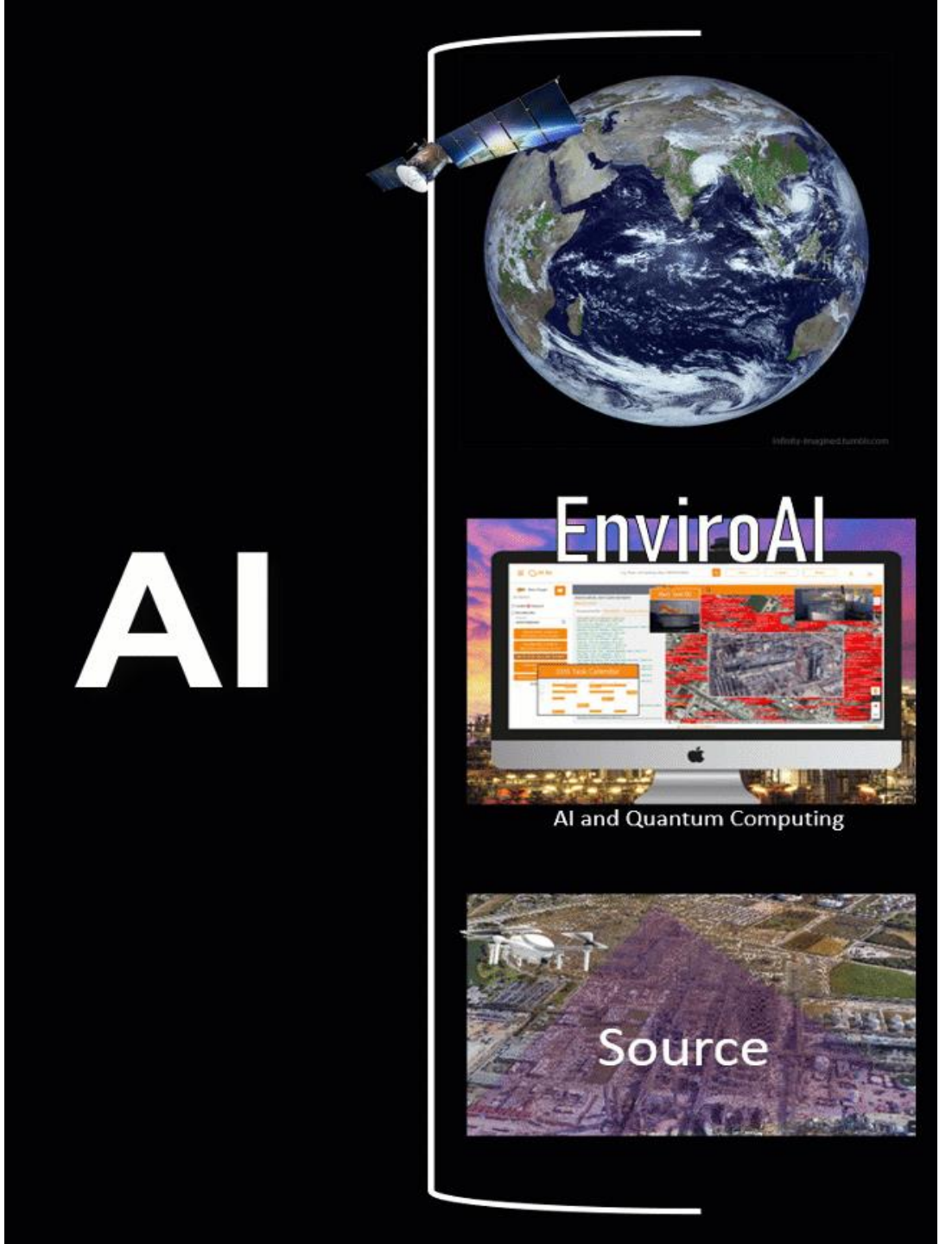


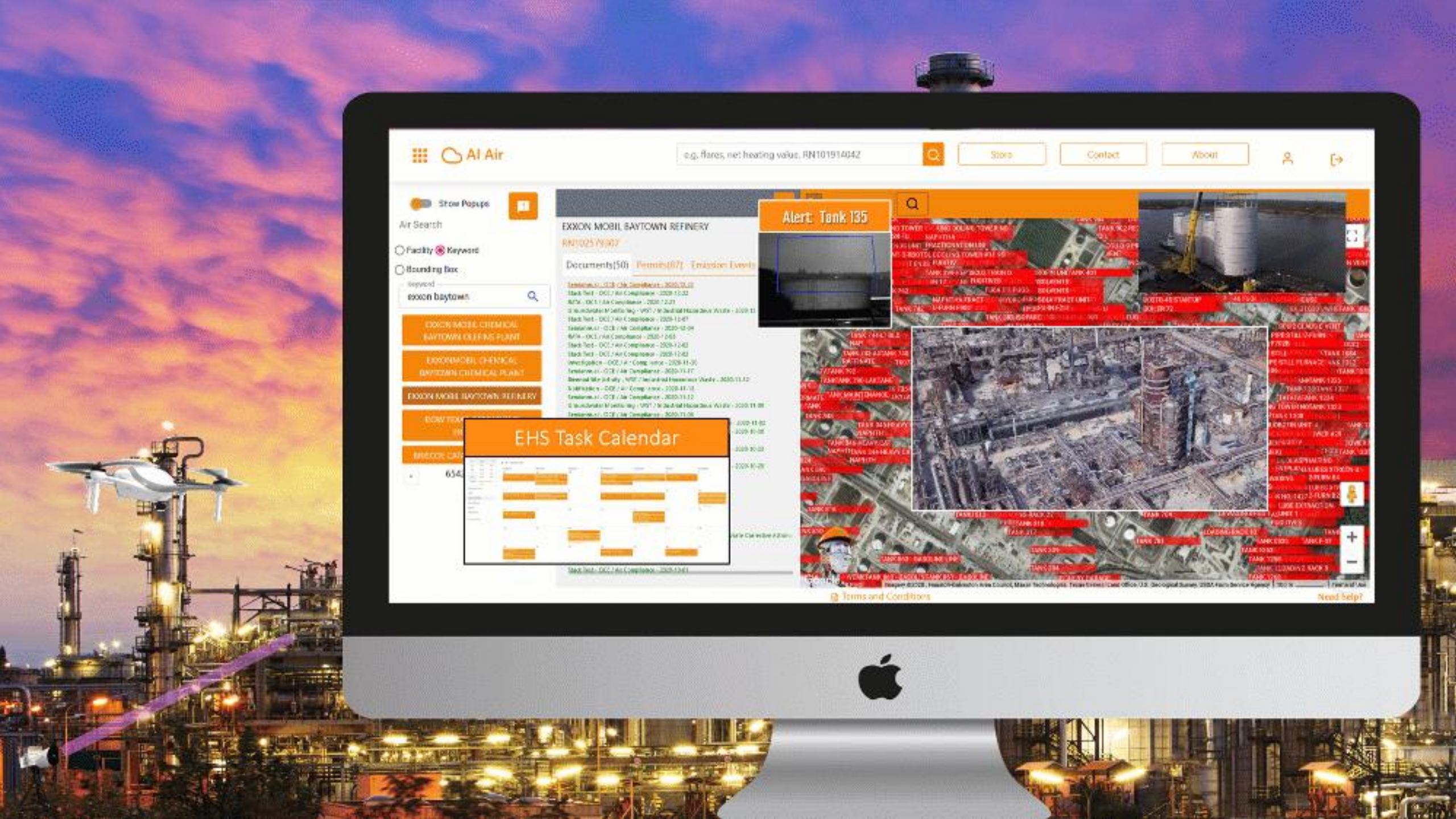
Artificial Intelligence





1. AI
2. Data/Remote-Sensing
3. Quantum Technology




AI Air
e.g. flares, net heating value, RN101914042
Store
Contact
About
Show Popups
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Facility
Keyword
Bounding Box
exxon baytown
EXXON MOBIL BAYTOWN REFINERY
Documents(50)
Alert: Tank 135
EHS Task Calendar
Terms and Conditions
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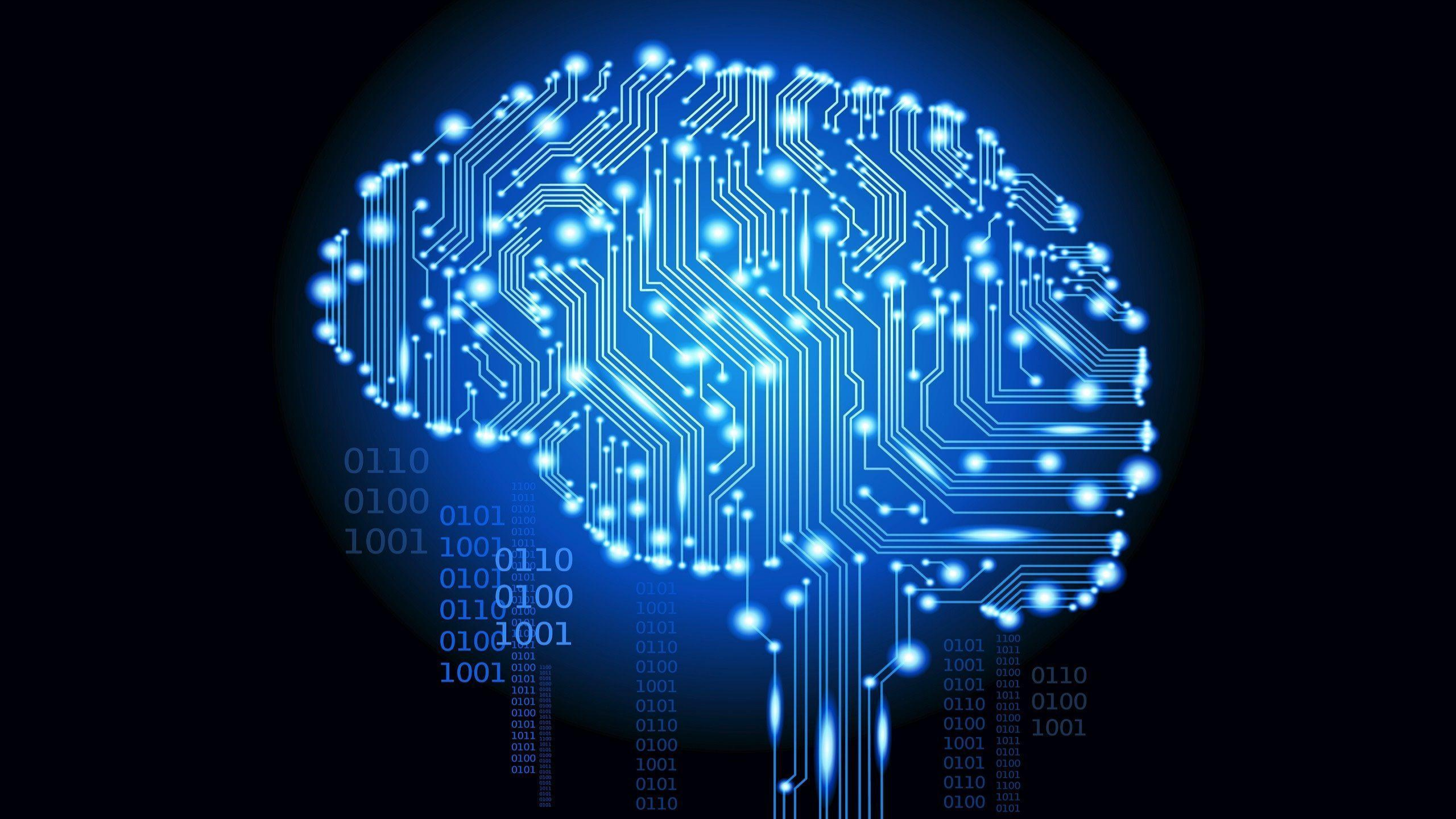

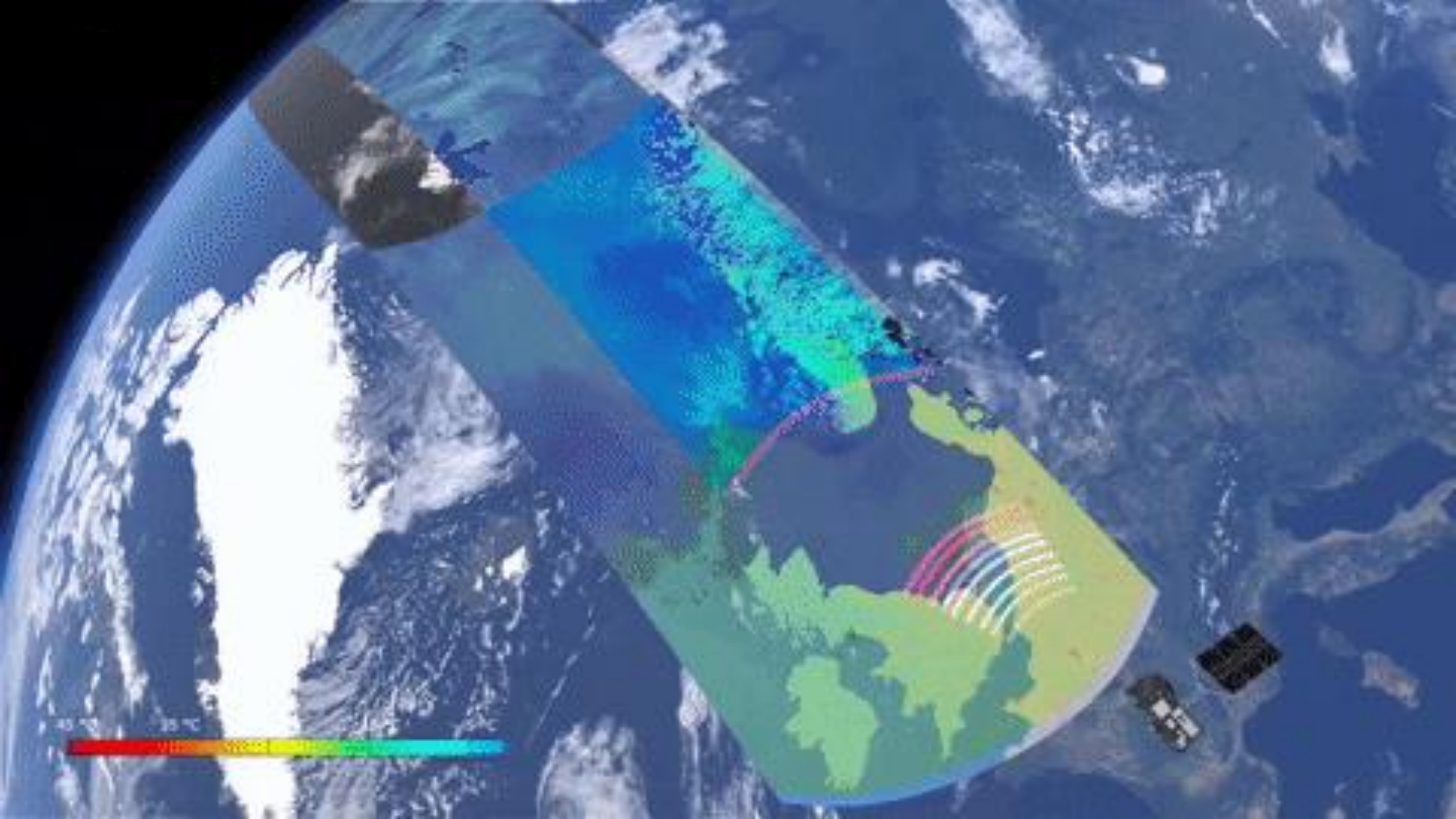

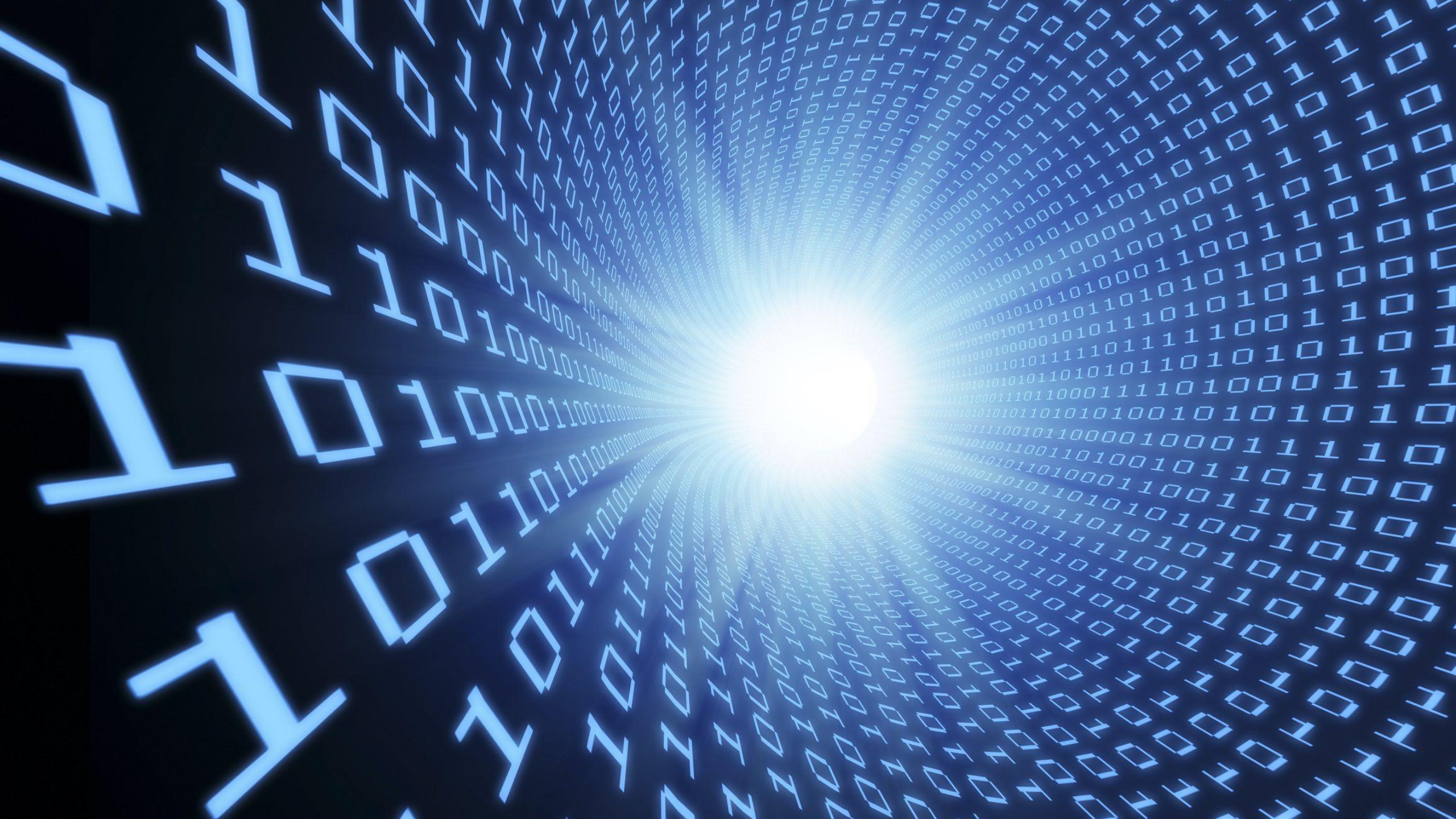

THE ENVIRONMENTAL RENAISSANCE