



ROBOTIC

GOVERN

ANCE.COM





SUSTAINABLE DEVELOPMENT GOALS



_taking a look into the future...





THE LOVERS

THE HERMIT

THE FOOL

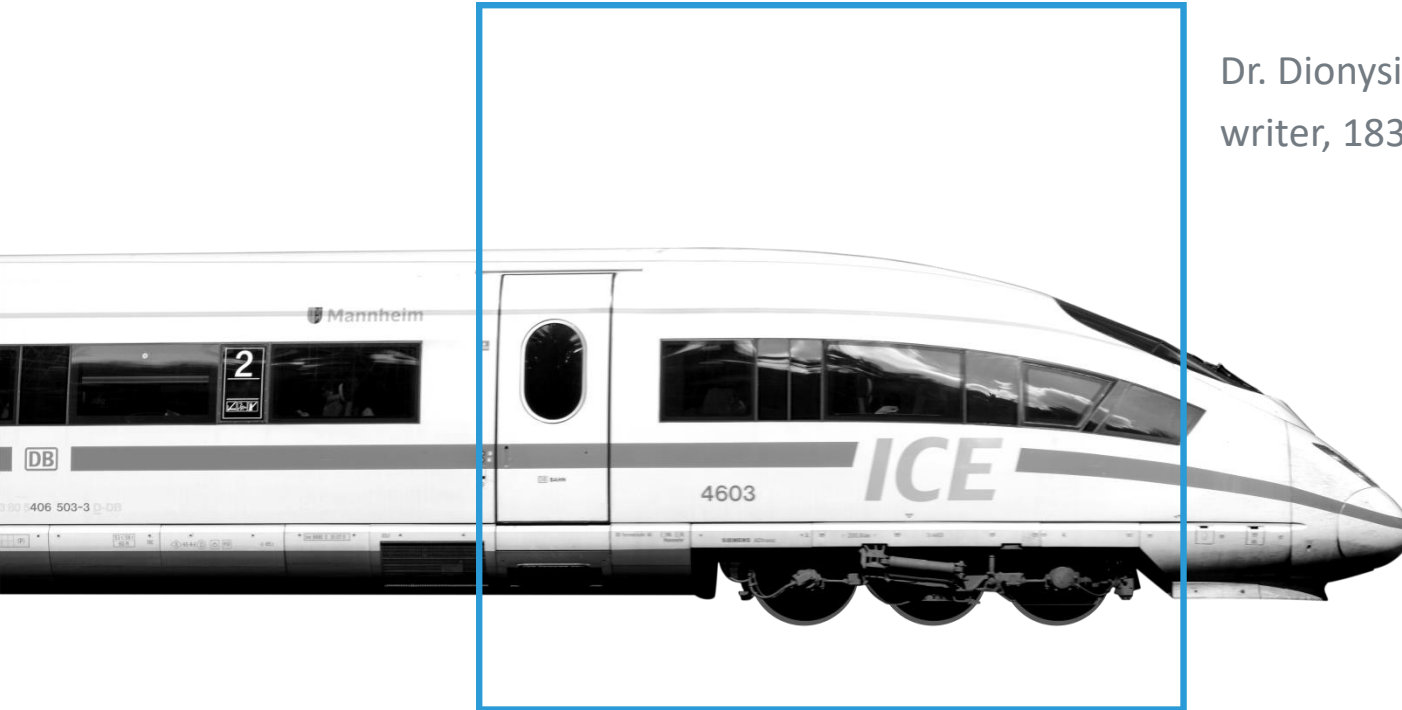
JUDGEMENT

VII



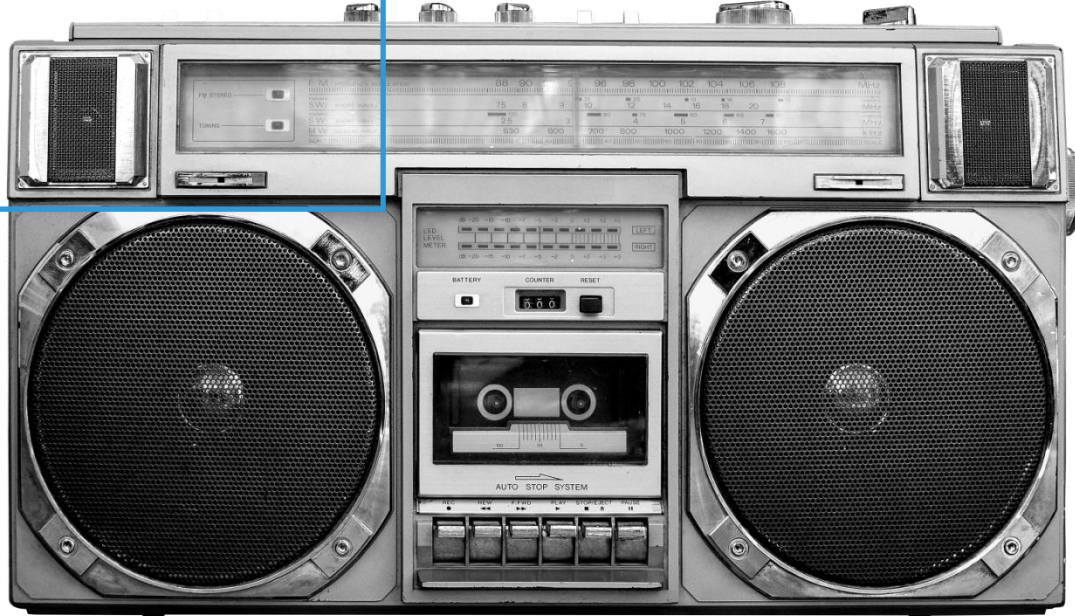
— "Rail travel at high speed is not possible because passengers, unable to breathe, would die of asphyxia."

Dr. Dionysius Lardner, Irish scientific writer, 1830



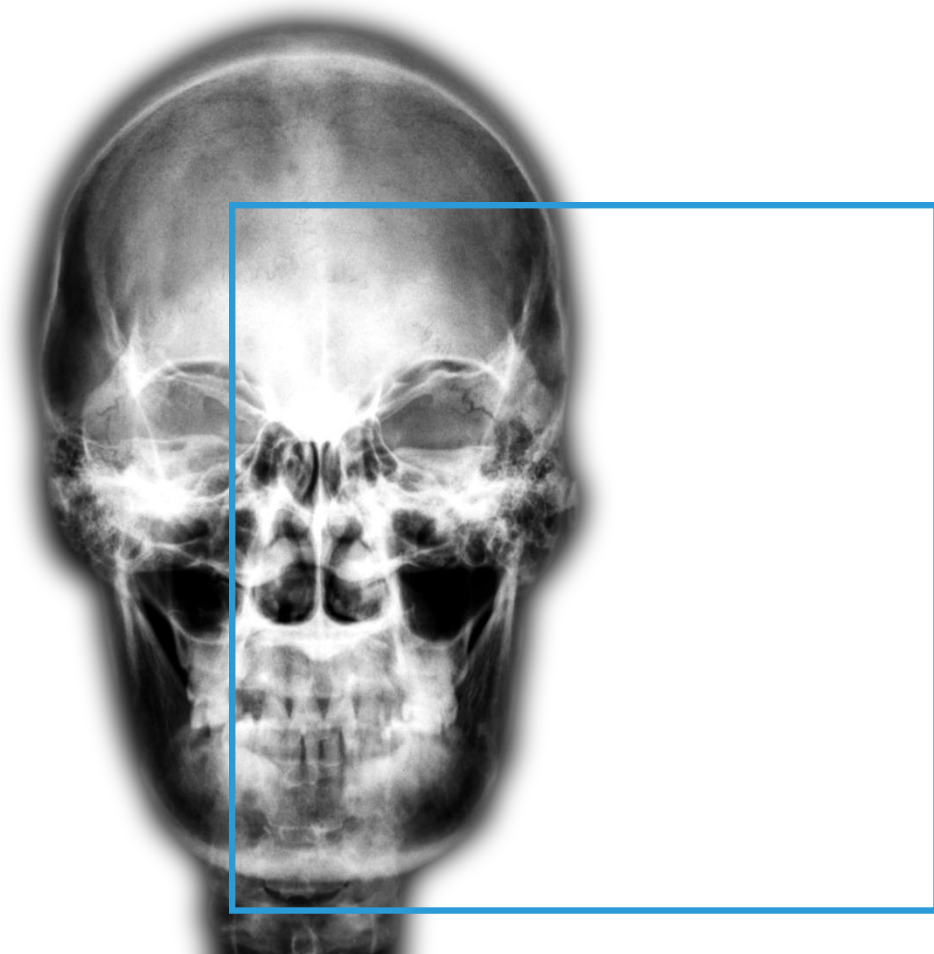
_"Radio has no future."

Lord Kelvin, former president
of the royal society, 1897



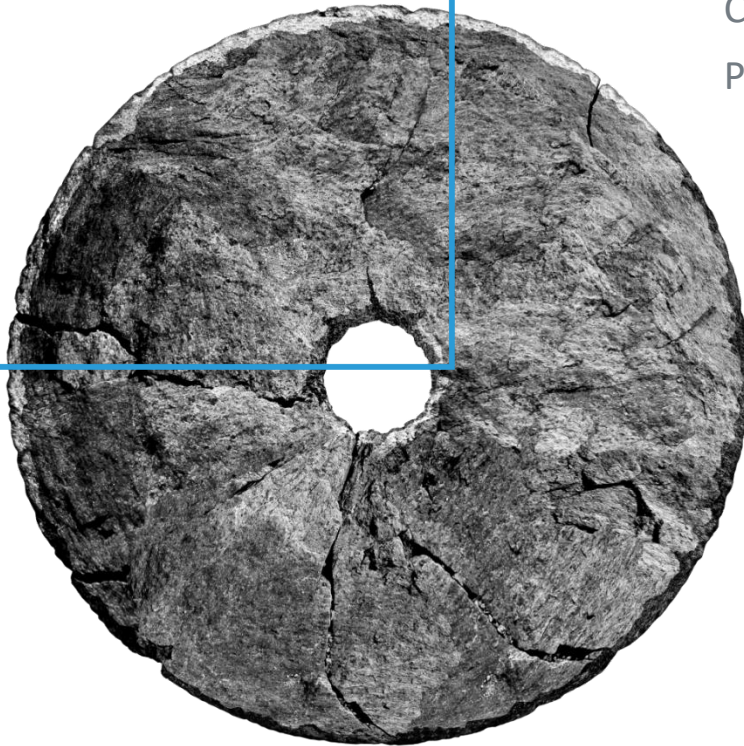
_"X-rays will prove to be a
hoax."

Lord Kelvin, former president
of the royal society, 1897



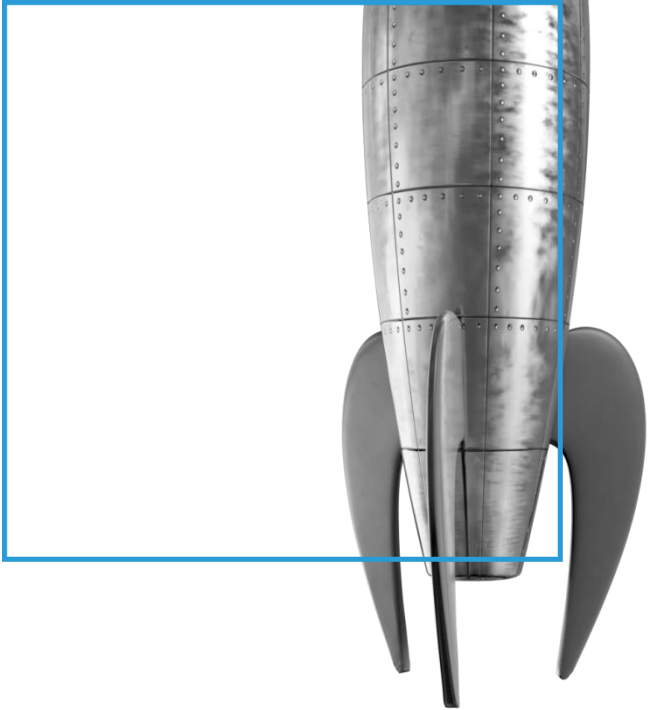
_"Everything that can be
invented has been invented."

Charles H. Duell, Commissioner, U.S. Office of
Patents, 1899



_"A rocket will never be able to
leave the Earth's atmosphere."

New York Times, 1936



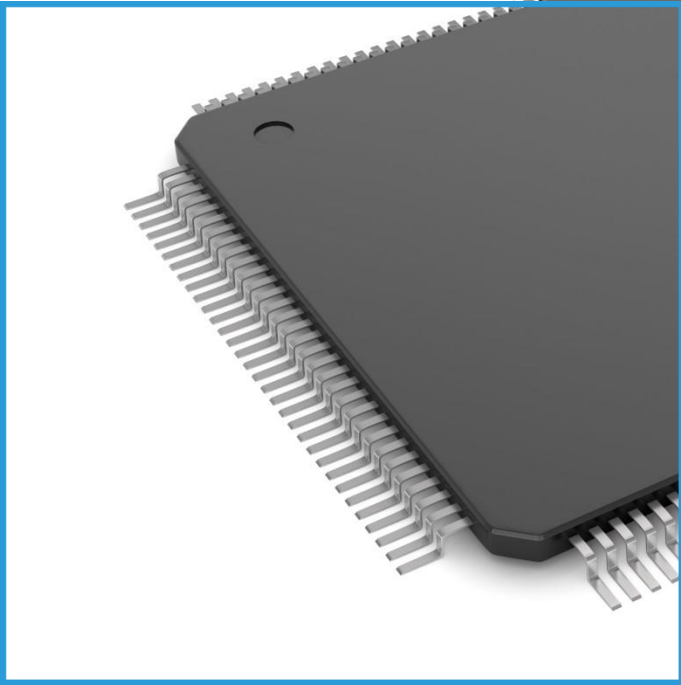
_"I think there is a world market
for maybe five computers."_

Thomas Watson, chairman of IBM, 1943



_"640K of memory should be
enough for anybody."

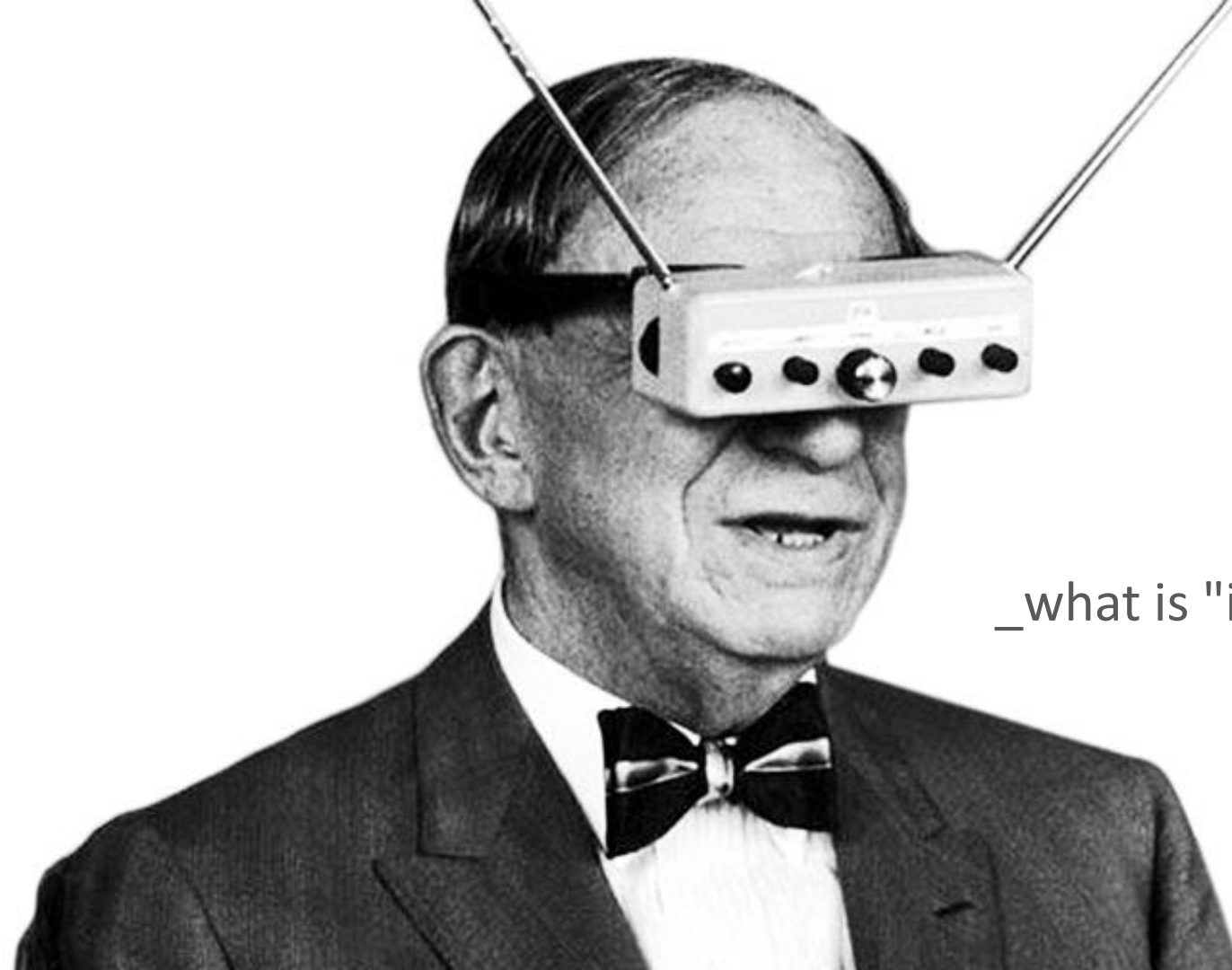
Bill Gates , 1981



_"100 million dollars is way too much to pay for Microsoft."

IBM, 1982





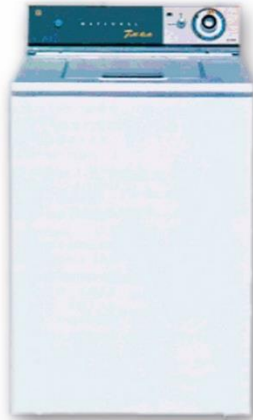
_what is "innovation"?







_incremental



_disruptive





Mode / Konsum



1 Jahr



Zeitgeist/ Märkte



5 Jahre



Wirtschaft



10 Jahre



Technologie



50 Jahre



Gesellschaft



200–8T Jahre

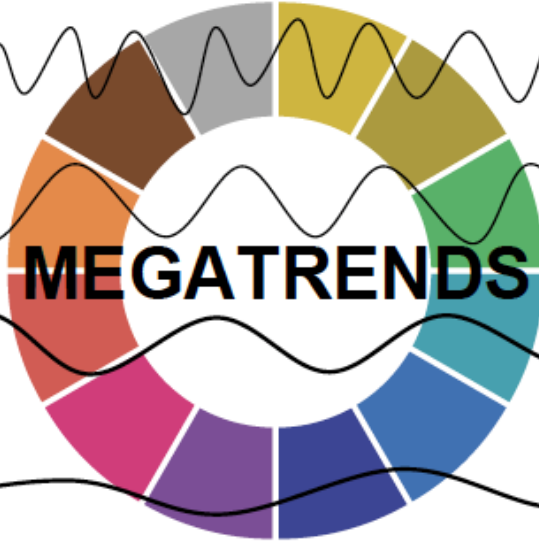


Natur



+100T Jahre

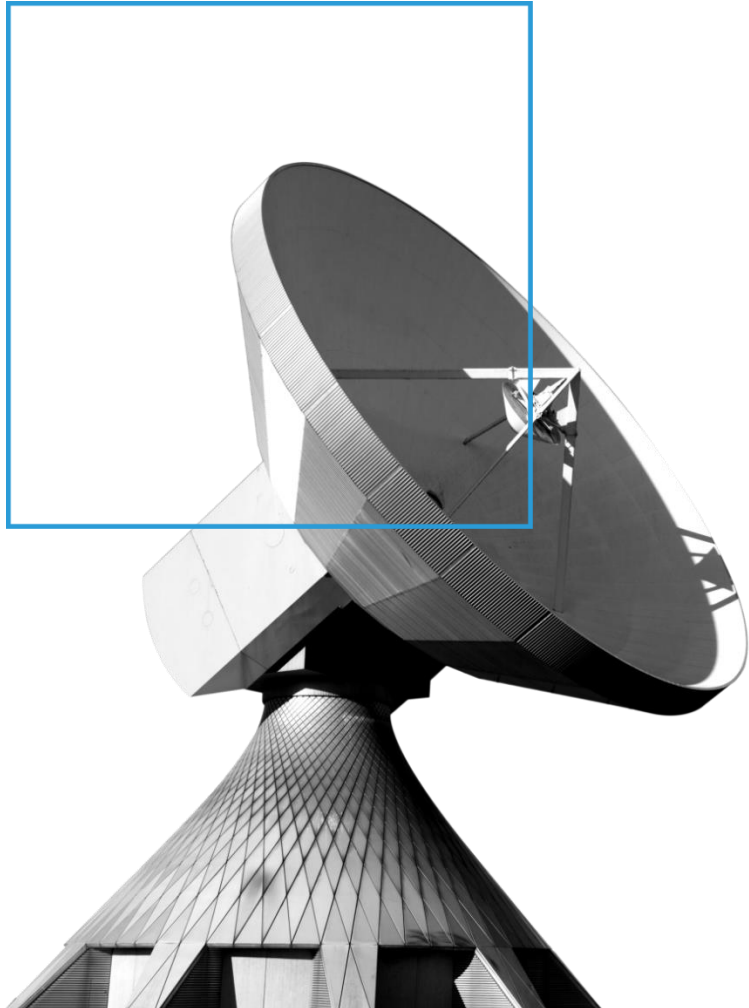
MEGATRENDS



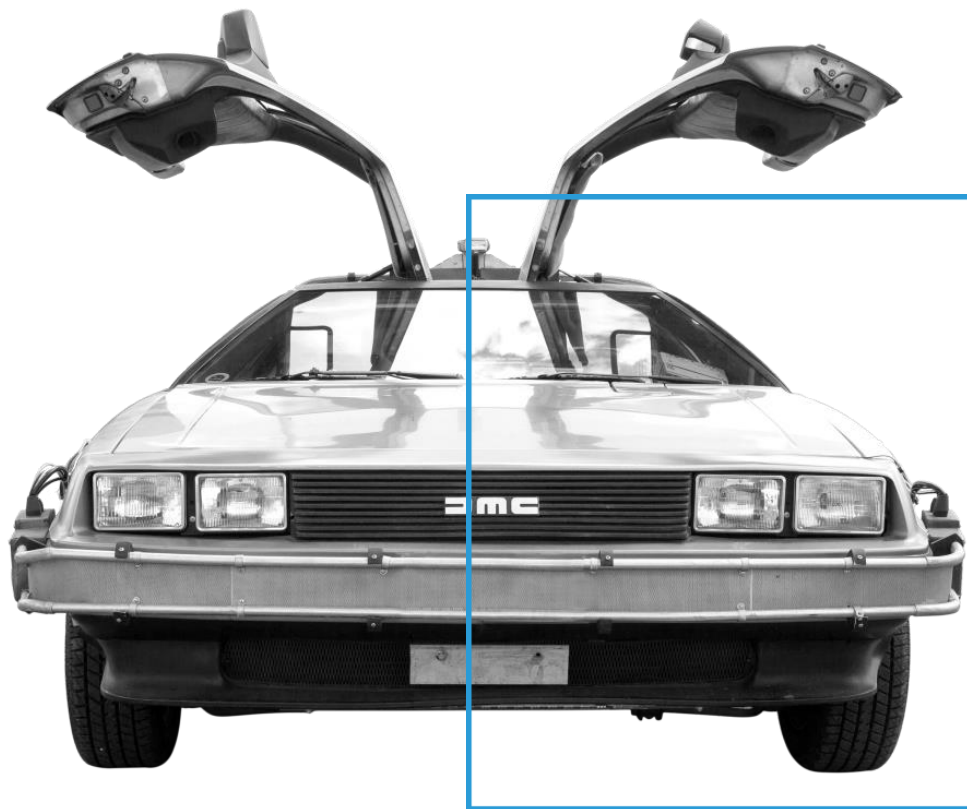


_megatrends

(naisbitt, 1982)



_connectivity



_mobility



_diversity



_climate change



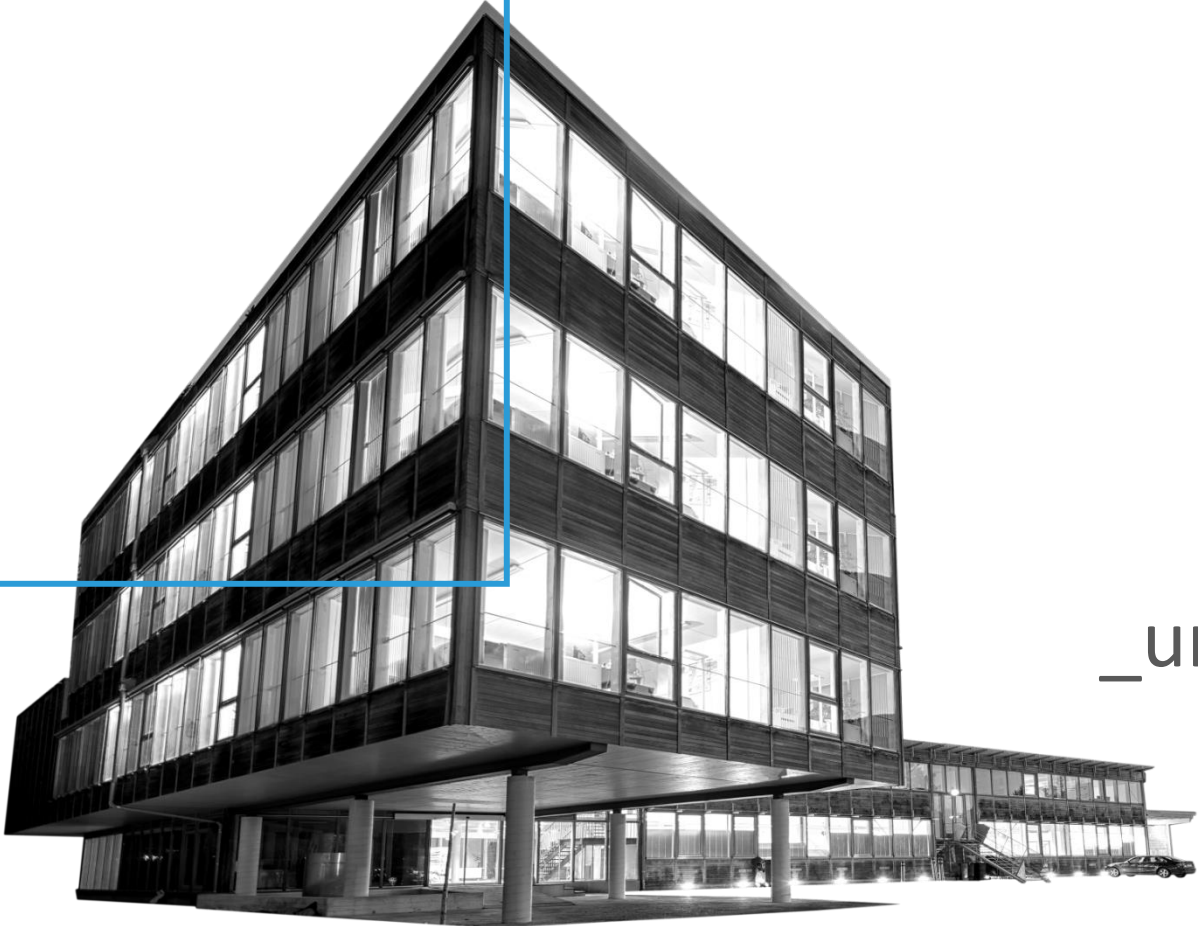
_resource scarcity



_helium
< 20 years!



_copper
< 35 years!

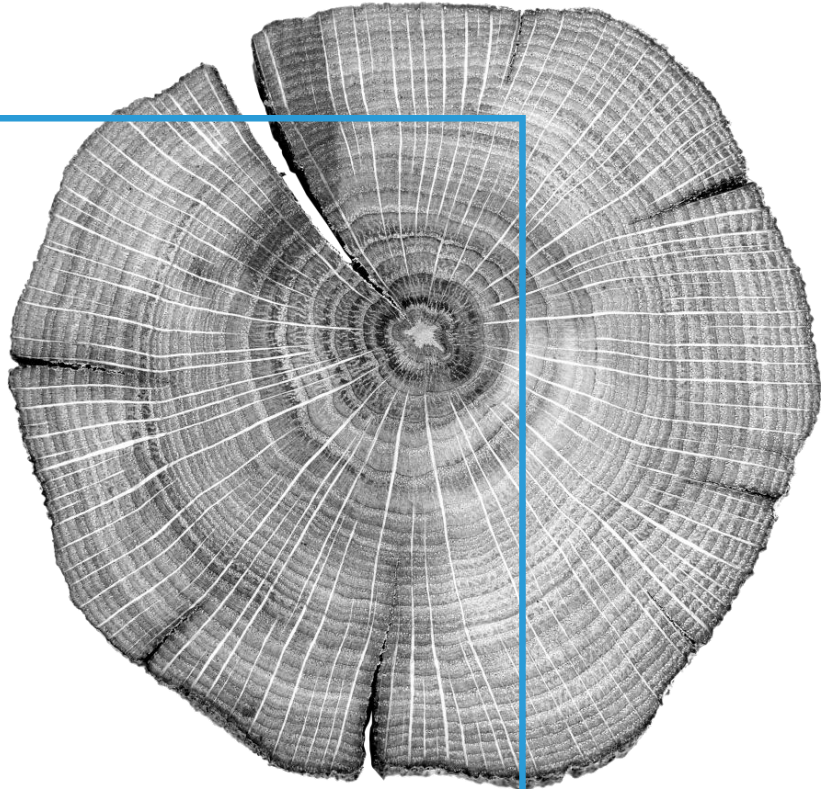


_urbanization





_safety



_sustainability

_digitalization / transparency



_globalization / internationalization

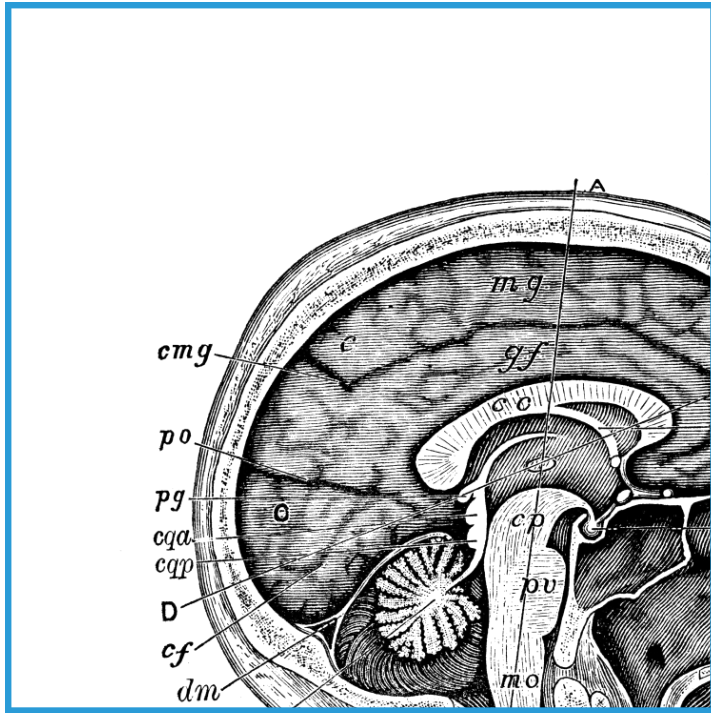




EVERGREEN

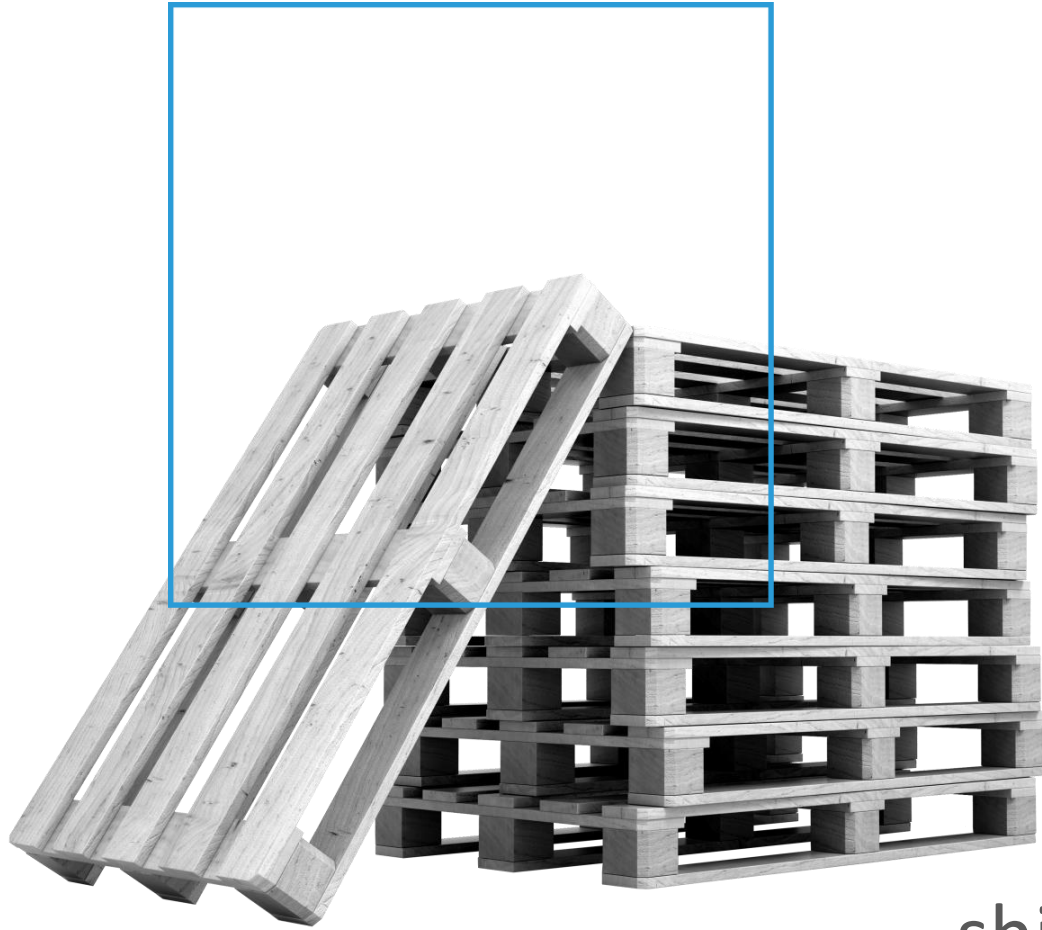


_individualization

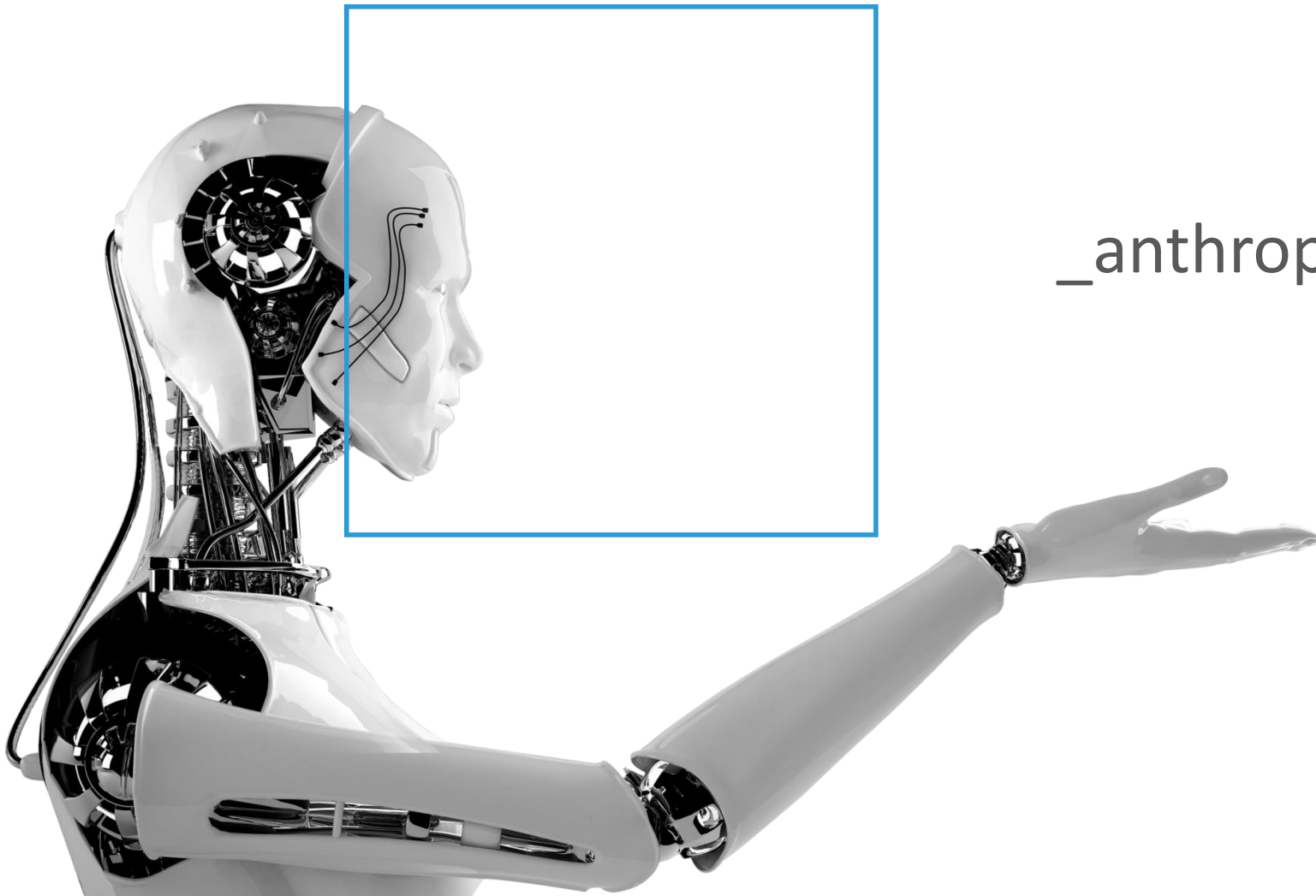


A
mg
c
gf
c
cmg
po
pg
cqa
cqp
D
cf
dm
cb
B
cp
pu
mo
sc
spc
W. Keiller

_knowledge society



_shift of economic power



_anthropocene



_demographic change



_overageing society:
changes of the
structure of
employment:
50% of the german
society will consist
of 50+ year olds in
2020

(McKinsey, Deutschland 2020:
Zukunftsperspektiven für die deutsche
Wirtschaft)



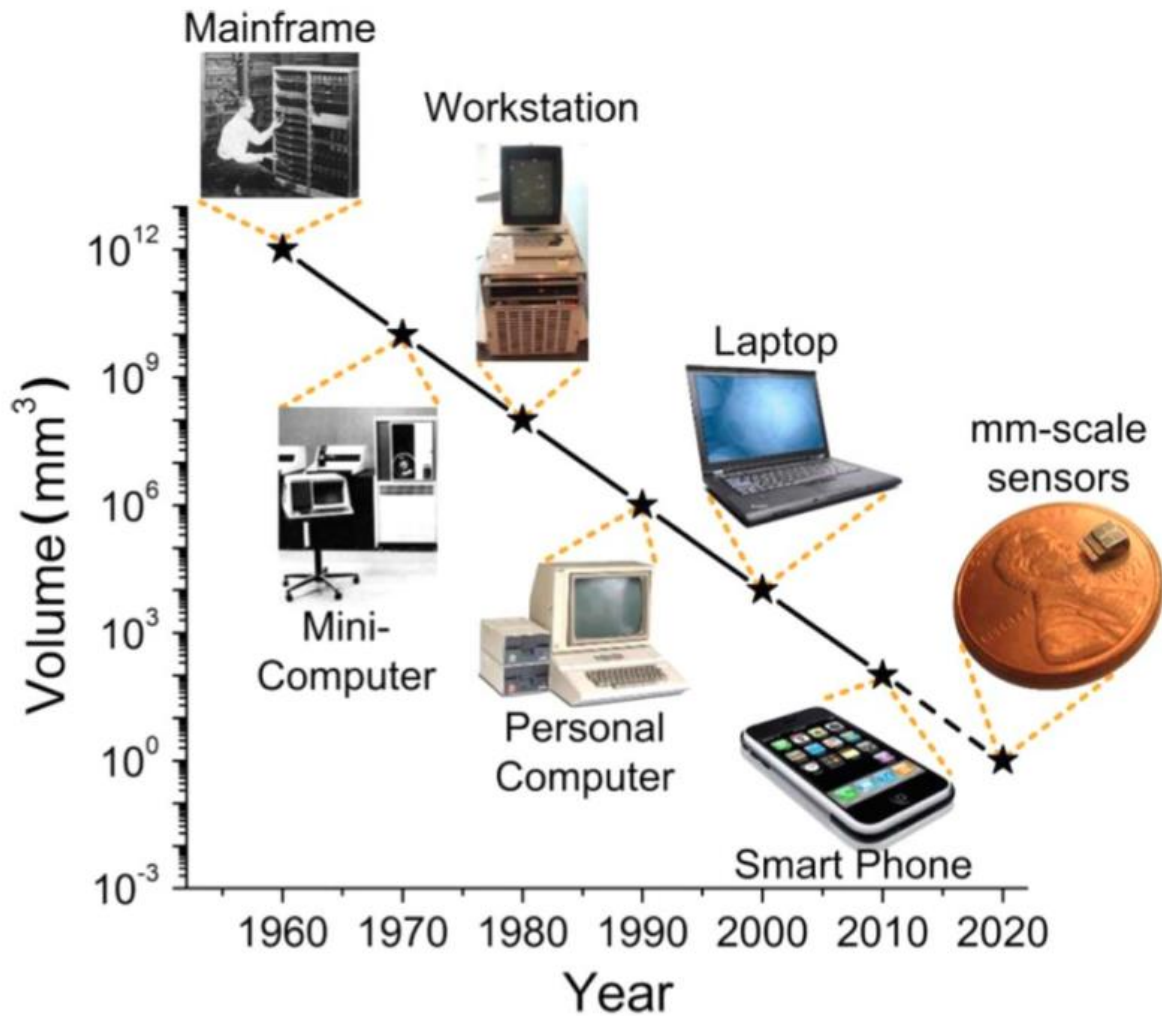
_3d

dull

dirty

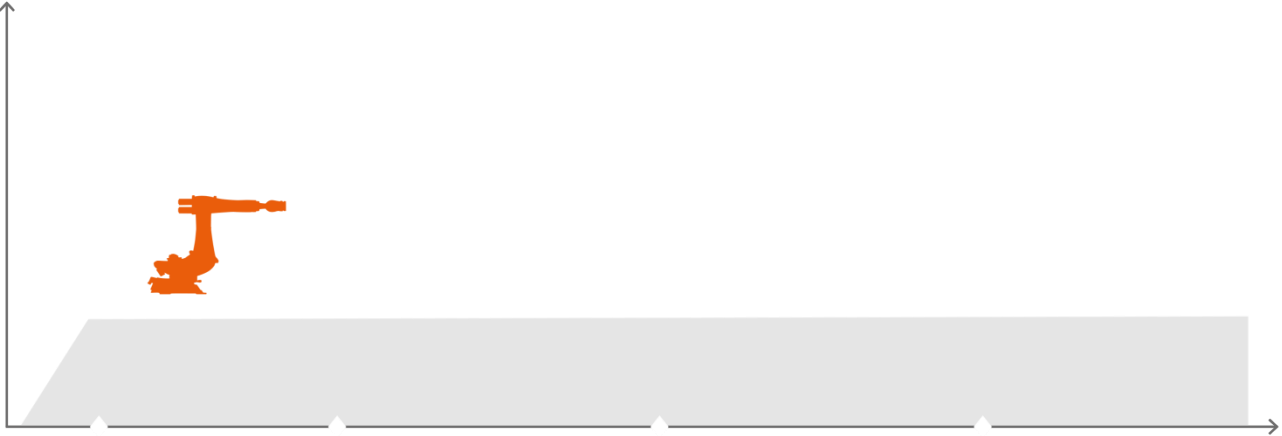
dangerous





KUKA's Model of the Four Robotic Revolutions

Innovation



Revolution

1st Robotic Revolution

Robot-Based

Automation Solution



KUKA's Model of the Four Robotic Revolutions

Innovation



Revolution

1st Robotic Revolution

2nd Robotic Revolution

Robot-Based
Automation Solution

Sensitive and Safe
Robot-Based
Automation Solution

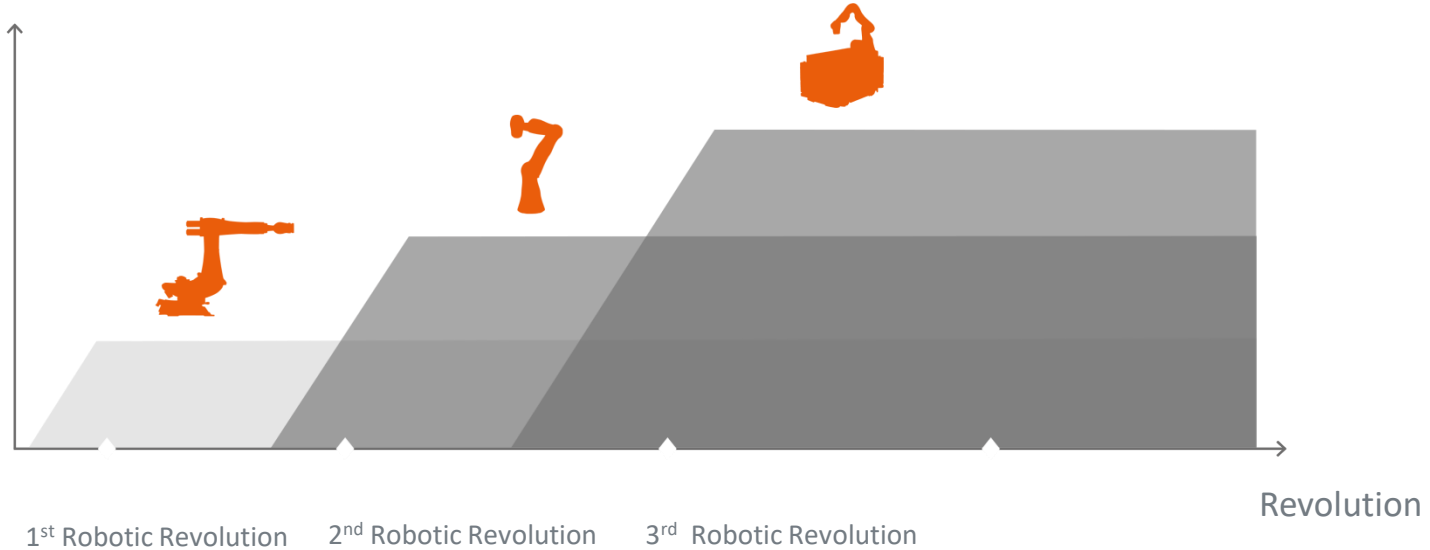


KUKA

KU

KUKA's Model of the Four Robotic Revolutions

Innovation



Robot-Based
Automation Solution

Sensitive and Safe
Robot-Based
Automation Solution

Mobile, Sensitive
and Safe Robot-Based
Automation Solution

Revolution

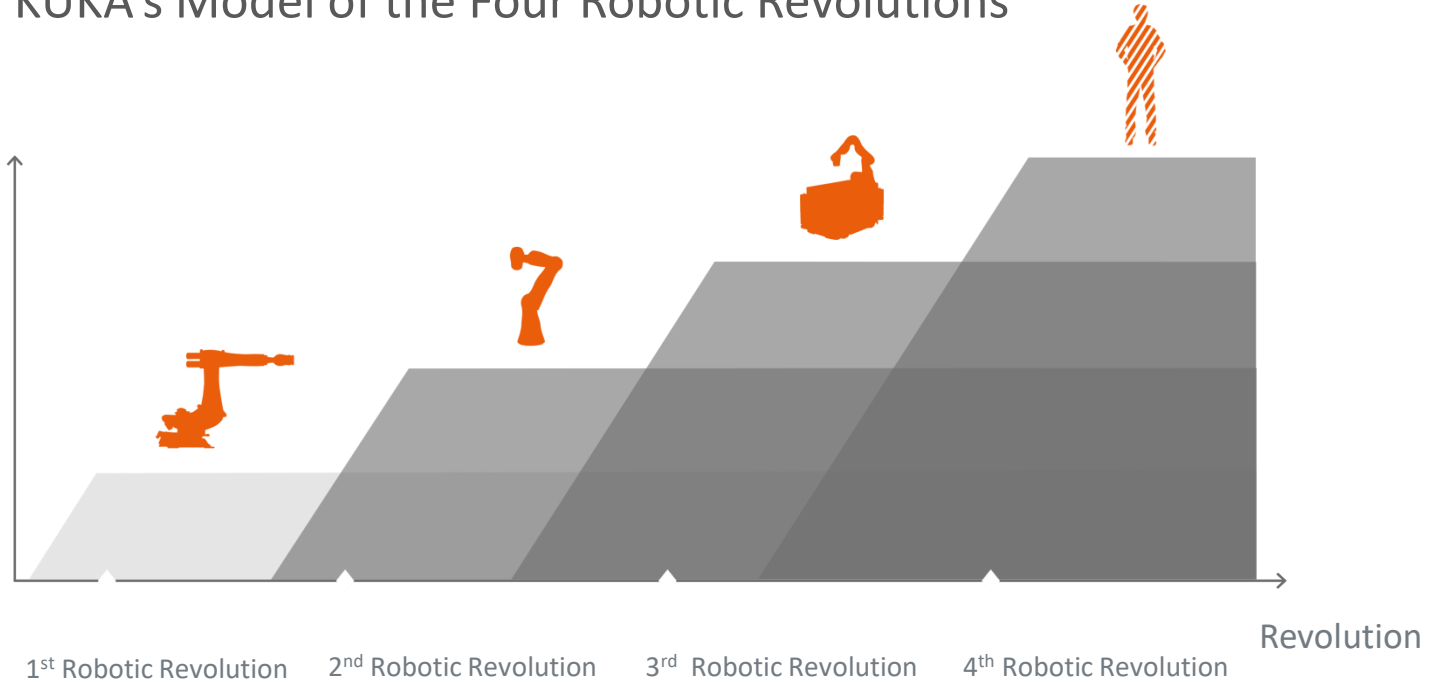


KUKA

KUKA

KUKA's Model of the Four Robotic Revolutions

Innovation



Robot-Based
Automation Solution

Sensitive and Safe
Robot-Based
Automation Solution

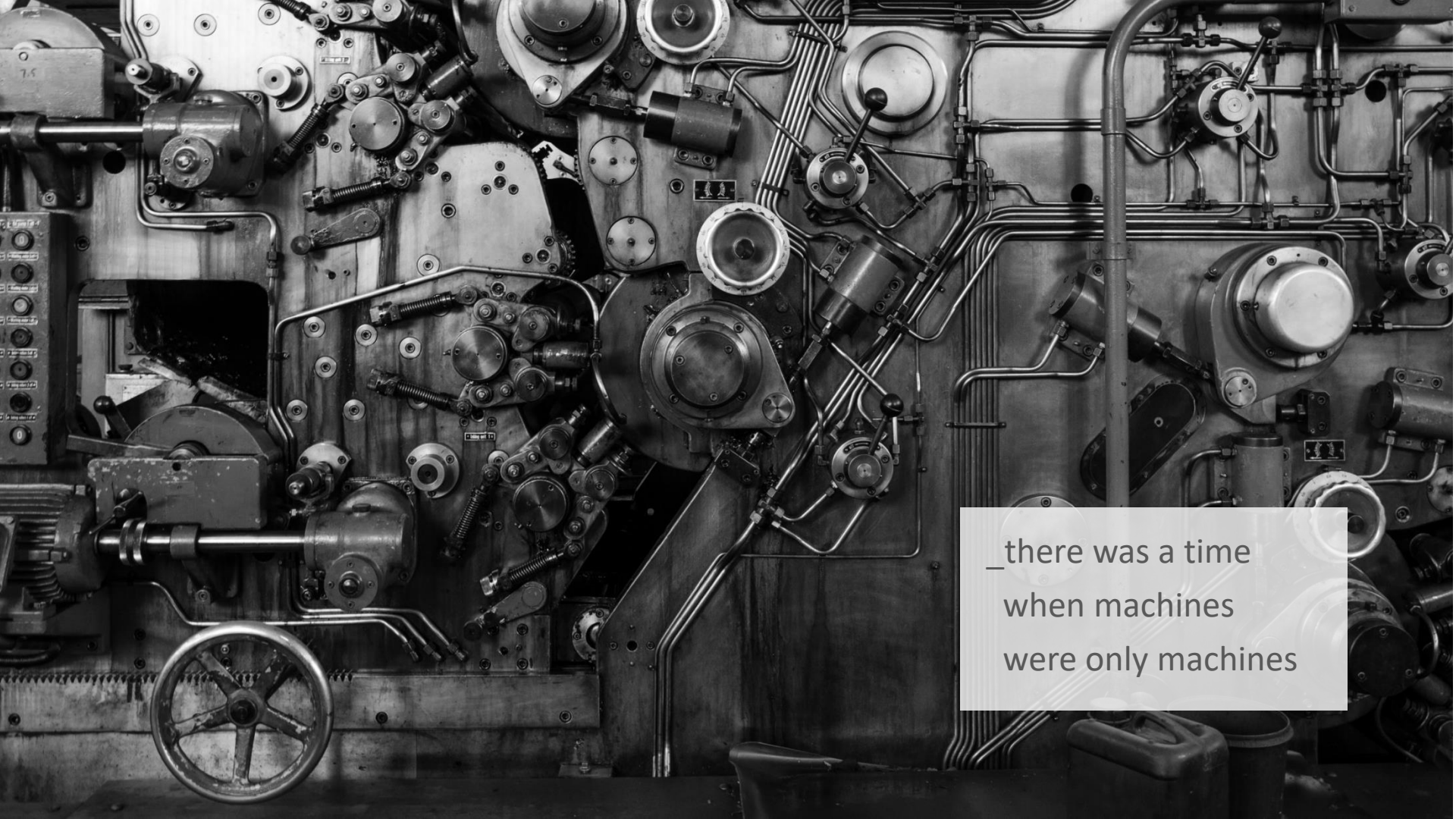
Mobile, Sensitive
and Safe Robot-Based
Automation Solution

Cognitive, Sensitive
and Safe Robot-Based
Automation Solution





_Your mobile
phone has
more
computing
power than
the computers
used for the
Apollo 11
moon landing.



_there was a time
when machines
were only machines

_will

AI

change
the
world?



_the

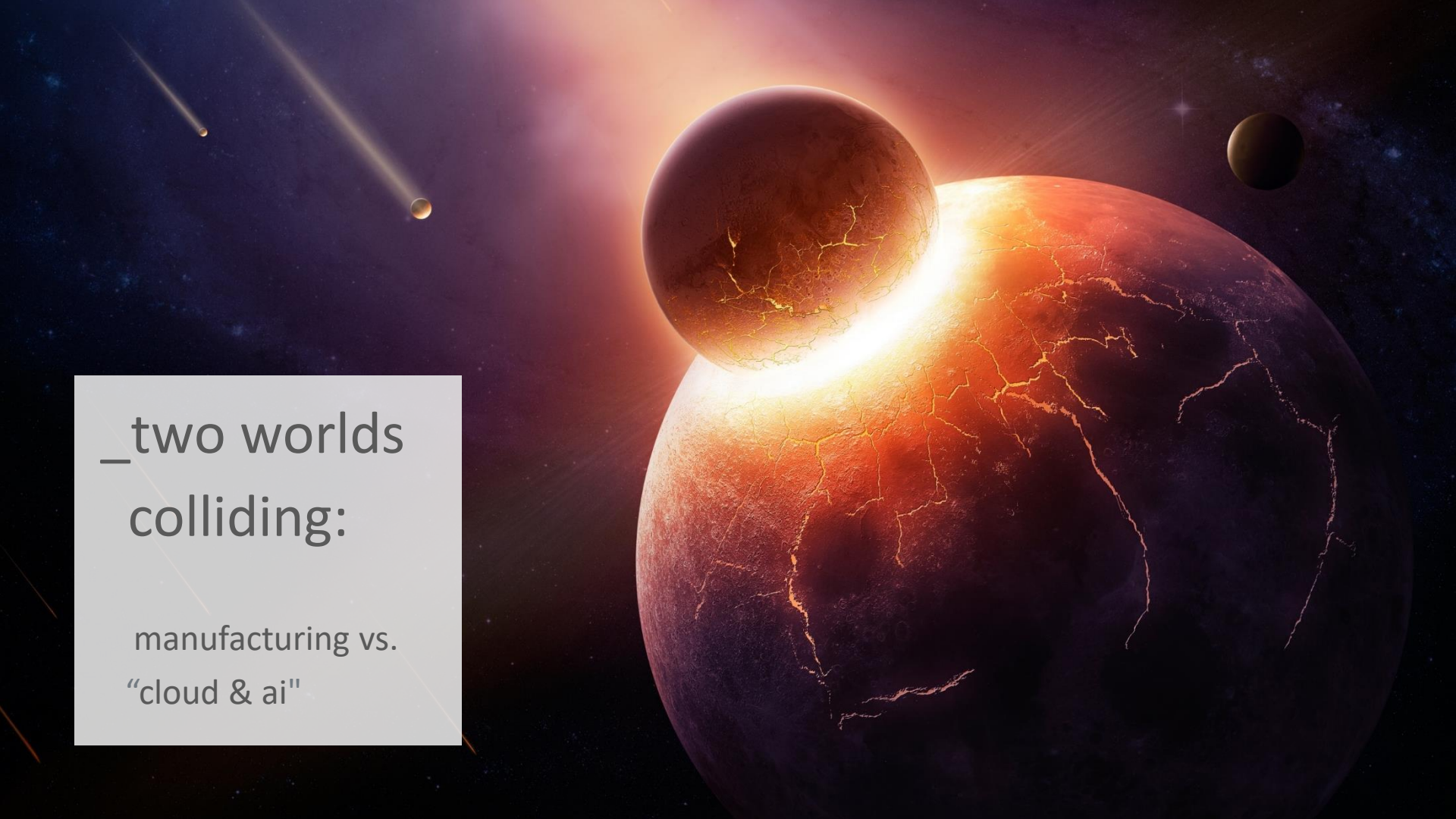
hunt

for

the

unicorn

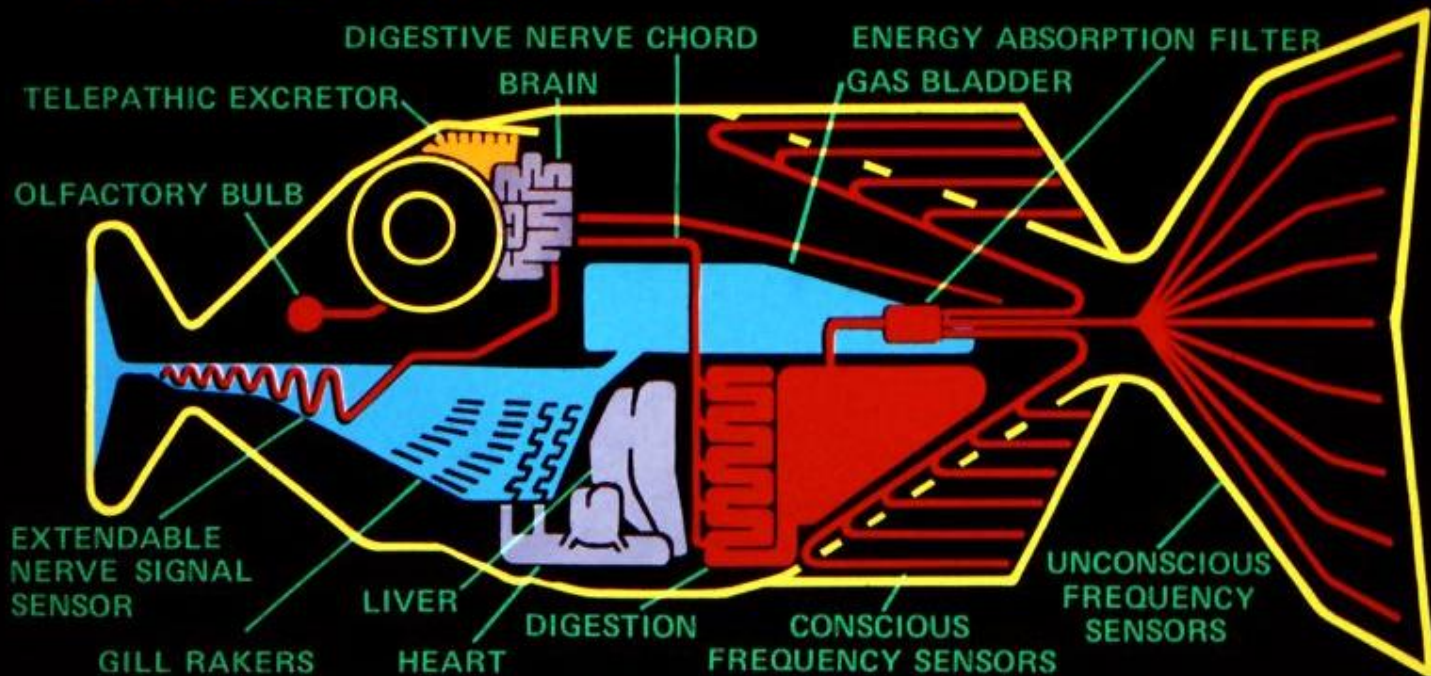




_two worlds
colliding:

manufacturing vs.
"cloud & ai"

BABEL FISH



THE BABEL FISH IS SMALL, YELLOW, LEECHLIKE, AND PROBABLY THE ODDEST THING IN THE UNIVERSE. IT FEEDS ON BRAIN WAVE ENERGY, ABSORBING ALL



_the

ai

cauldron



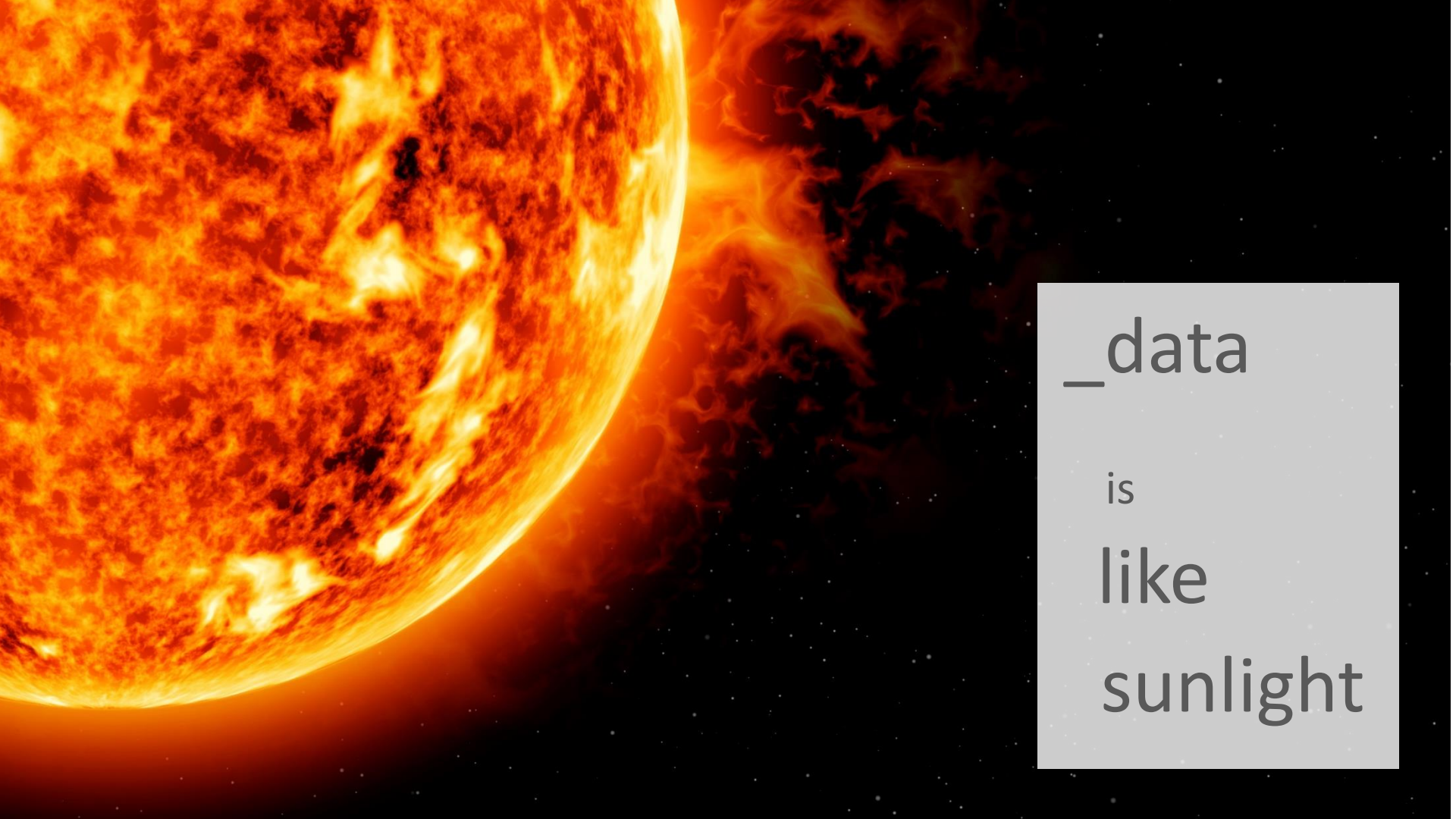
_data

is

the

new

oil



`_data`

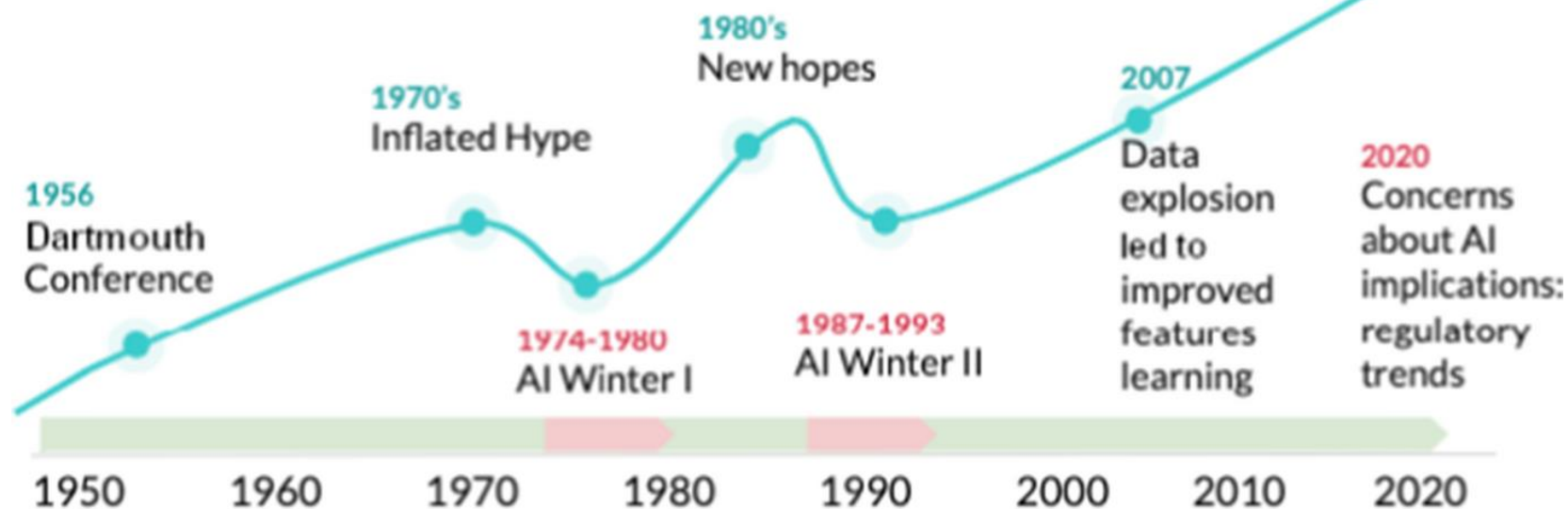
is

like

sunlight

Explosive growth,
"4th industrial revolution"

— investment & research = f(expectations, results)



*Top-down knowledge representation:
Symbolic AI*

*Bottom-up knowledge representation:
Connectivism*

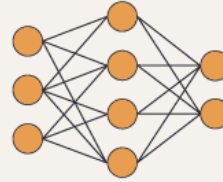
Machine Learning



Input



Merkmalsextraktion
(z. B. Farbe, Form, ...)



Klassifikation



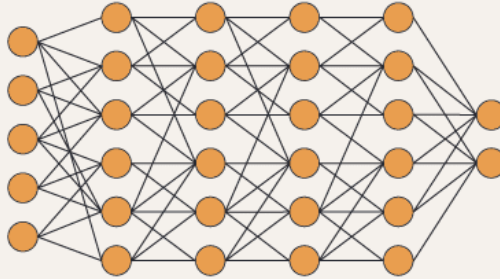
Apfel
 Banane

Output

Deep Learning



Input



Merkmalsextraktion & Klassifikation

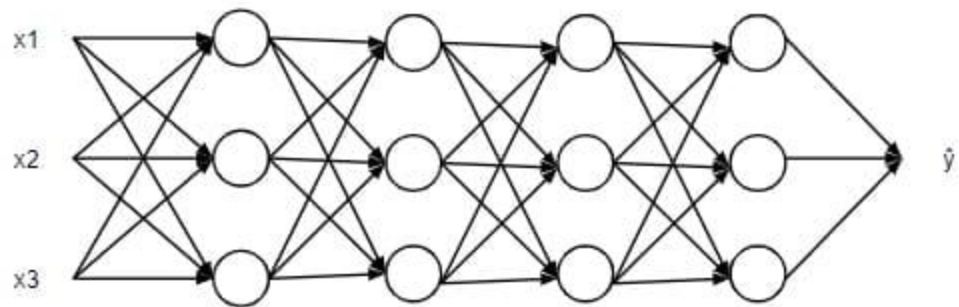
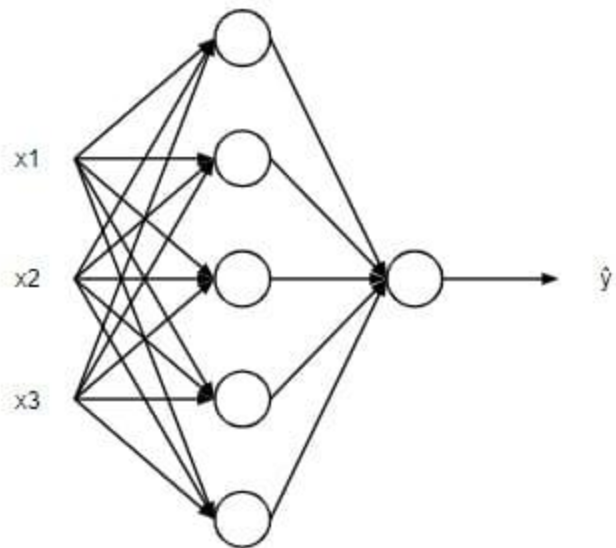


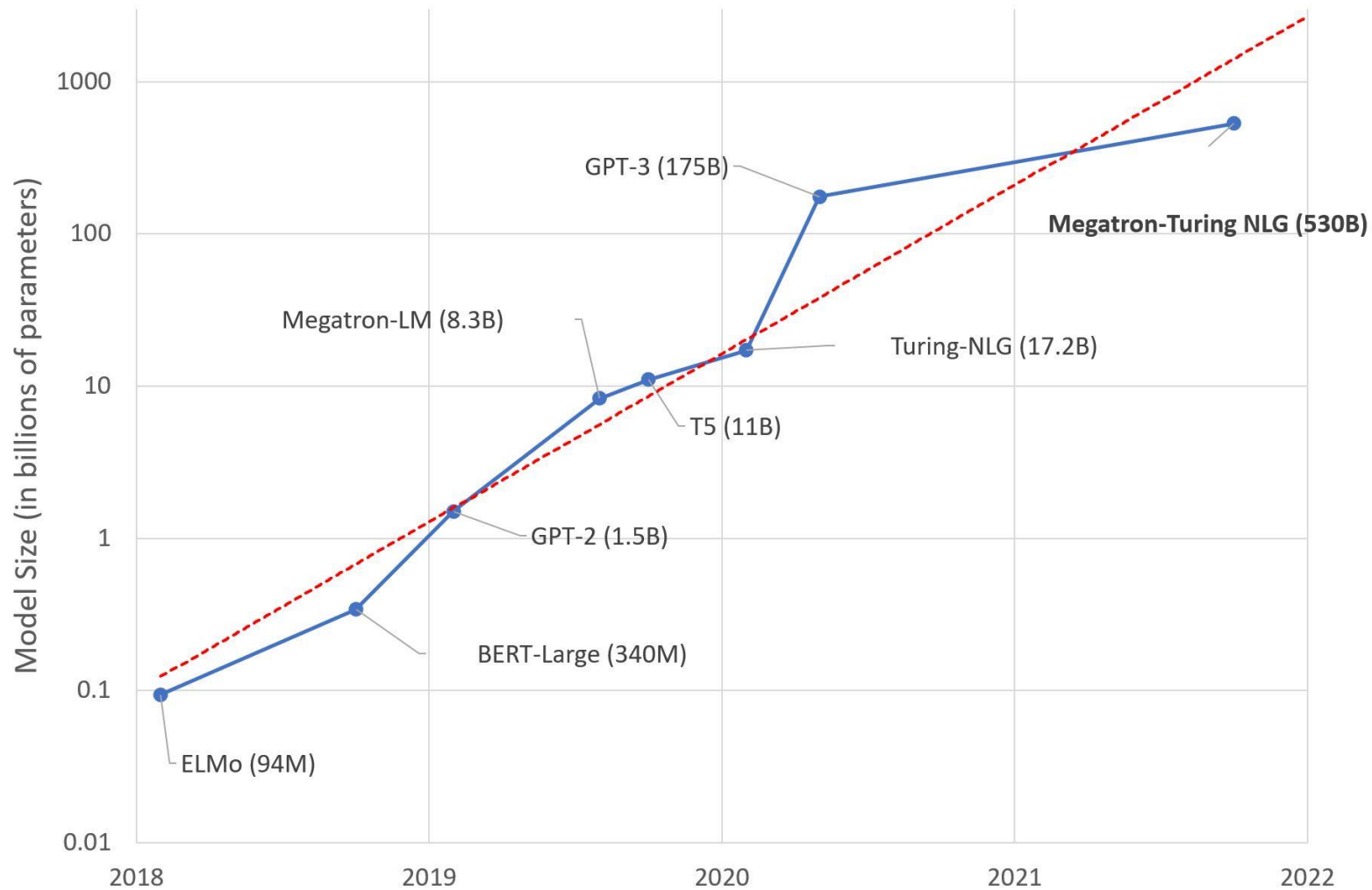
Apfel
 Banane

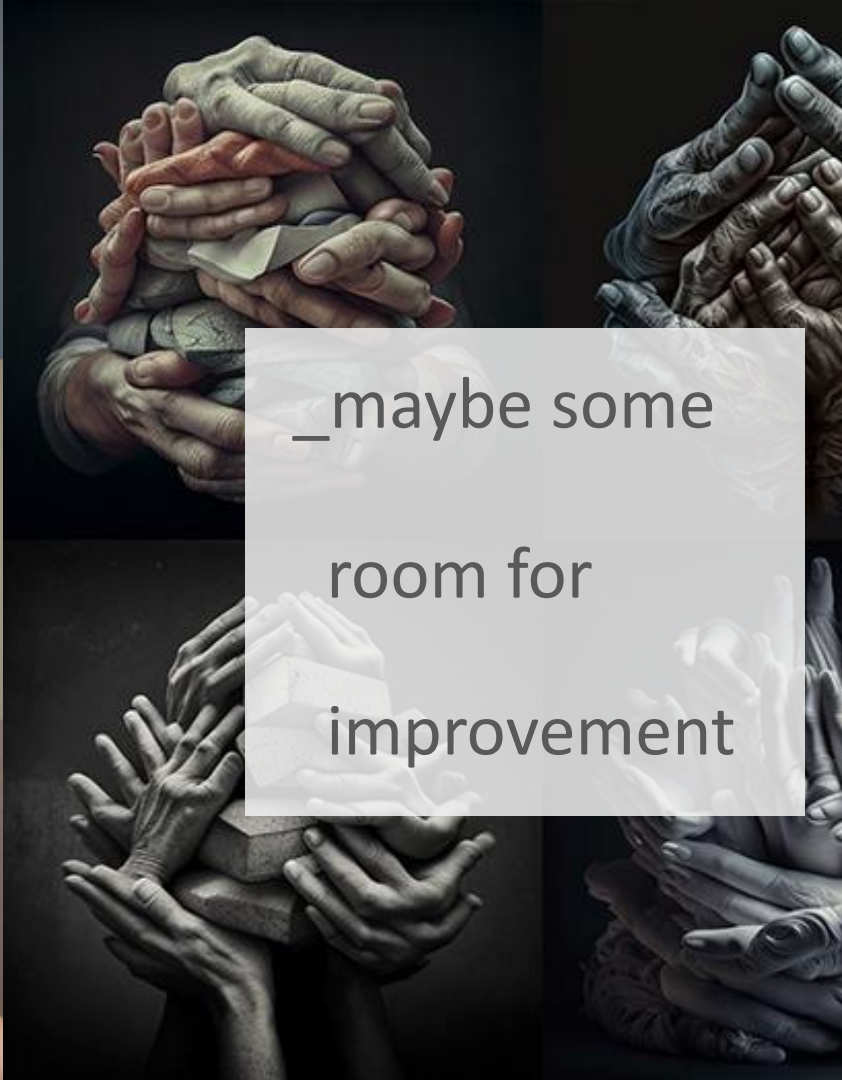
Output

_dog or muffin?











freethink

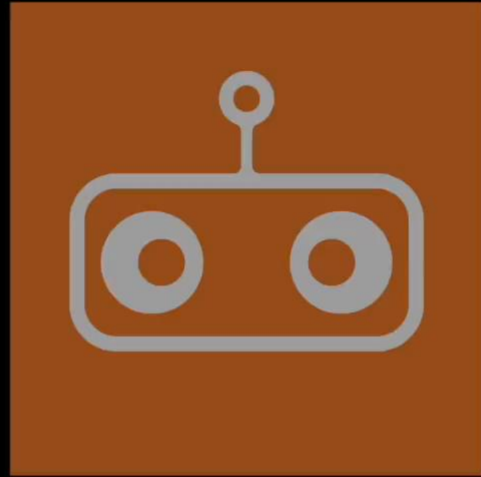




hadrianX

hadrianX



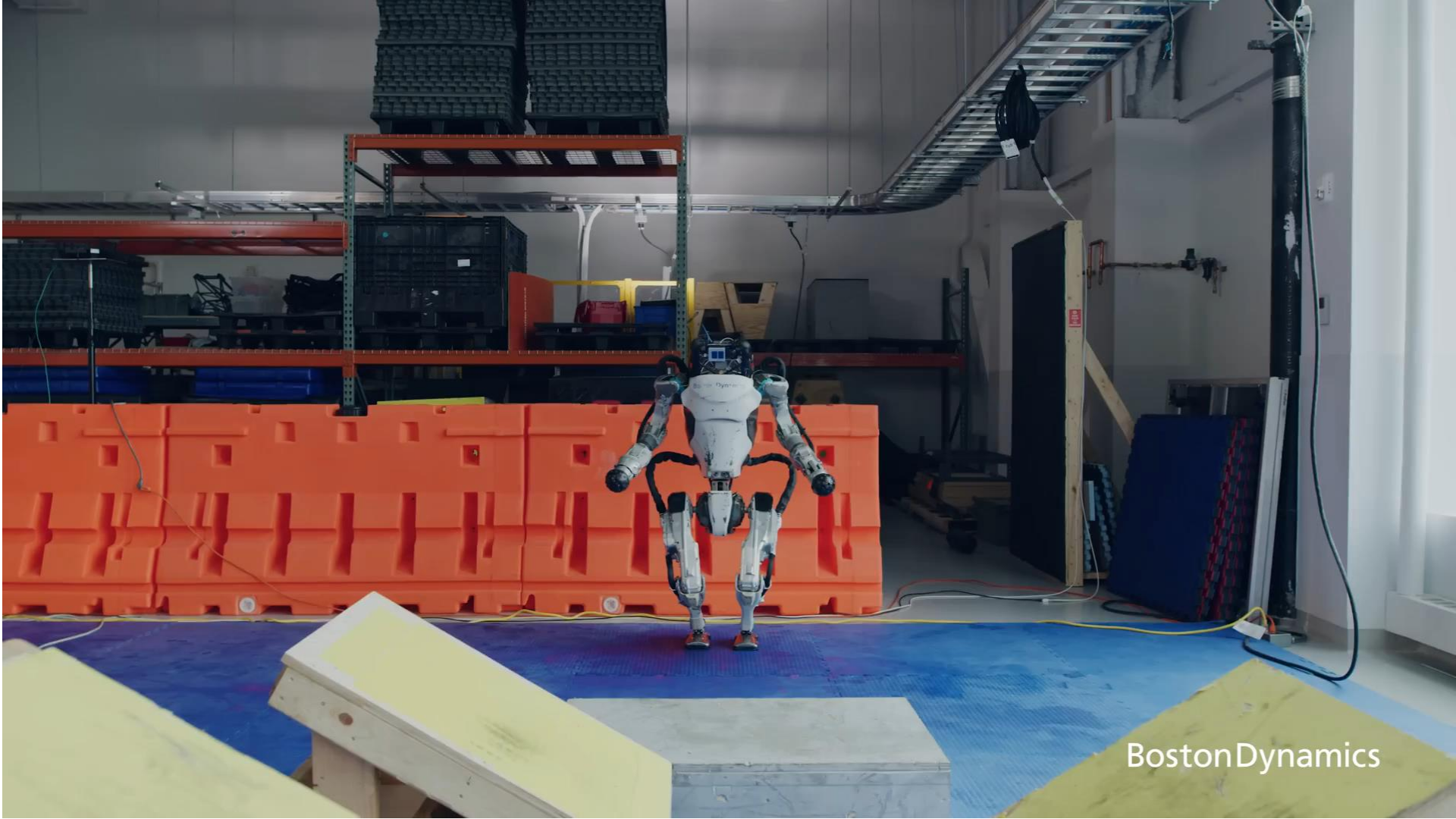


DUSTY
ROBOTICS

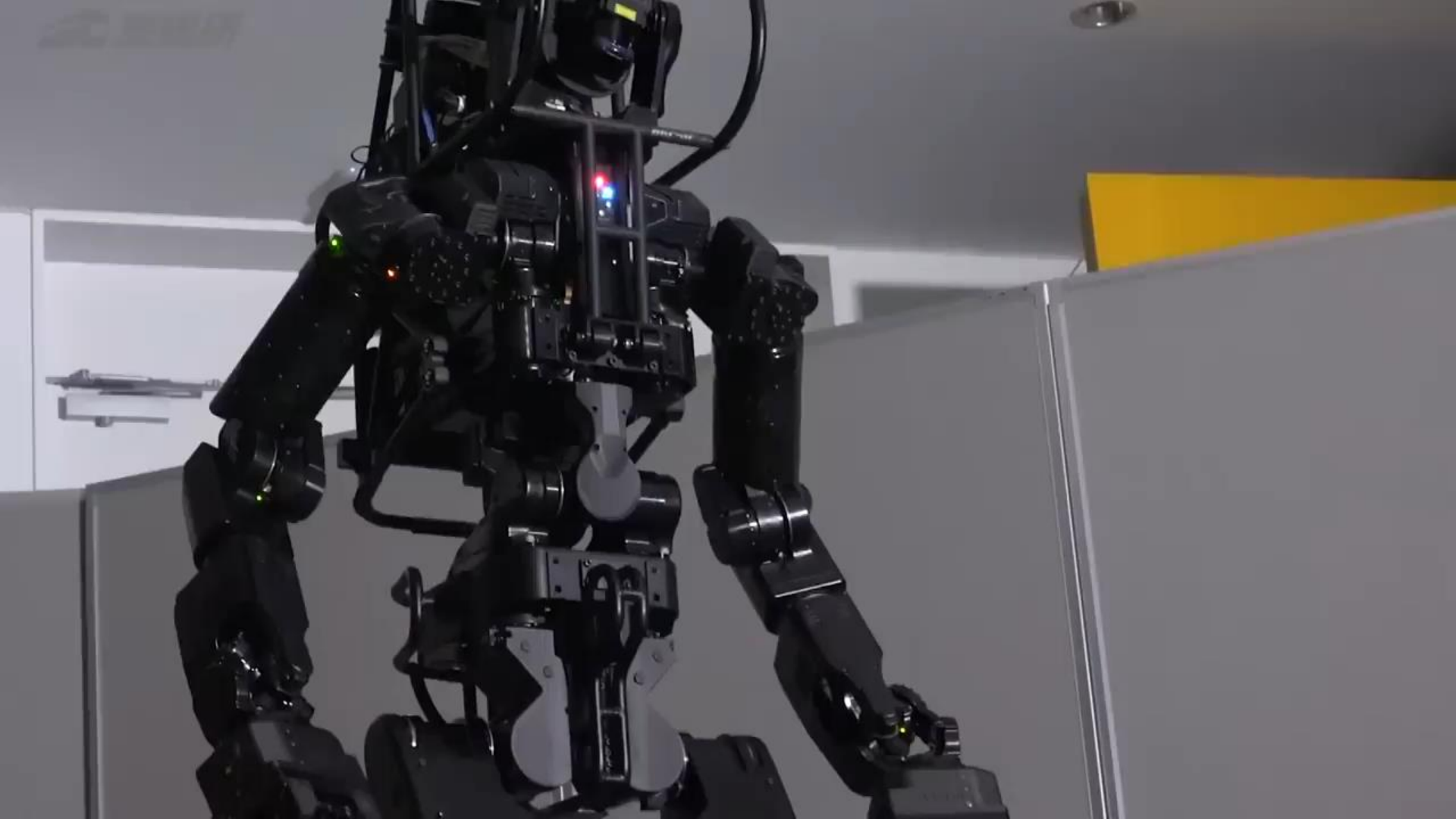


Boston Dynamics



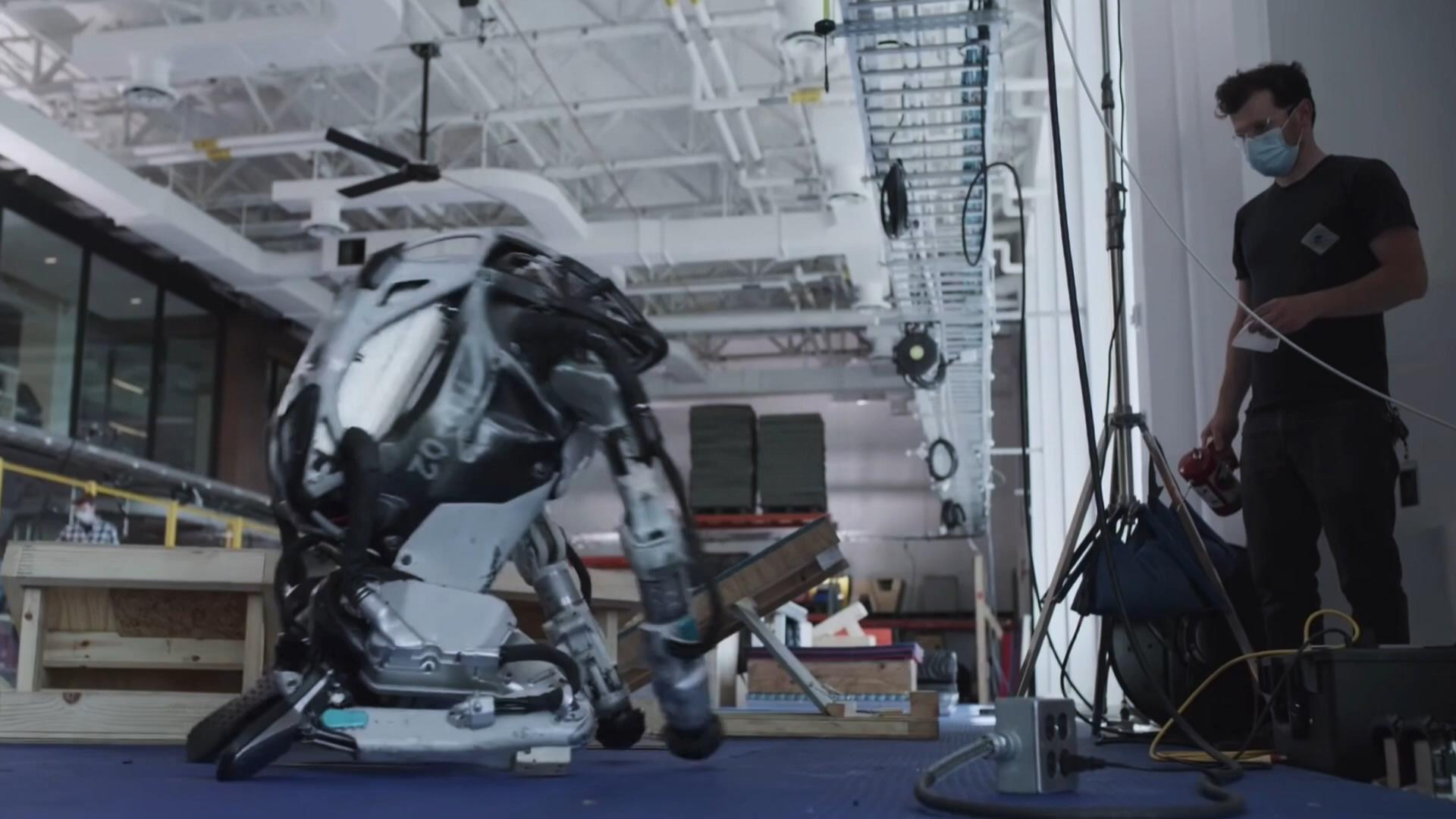


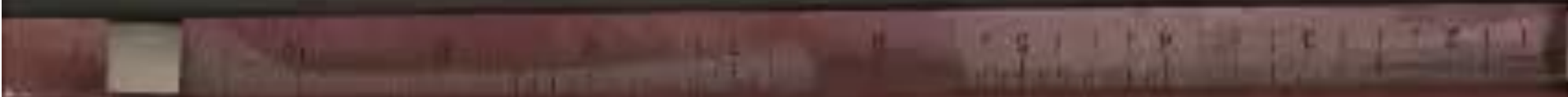
BostonDynamics





robocalypse?

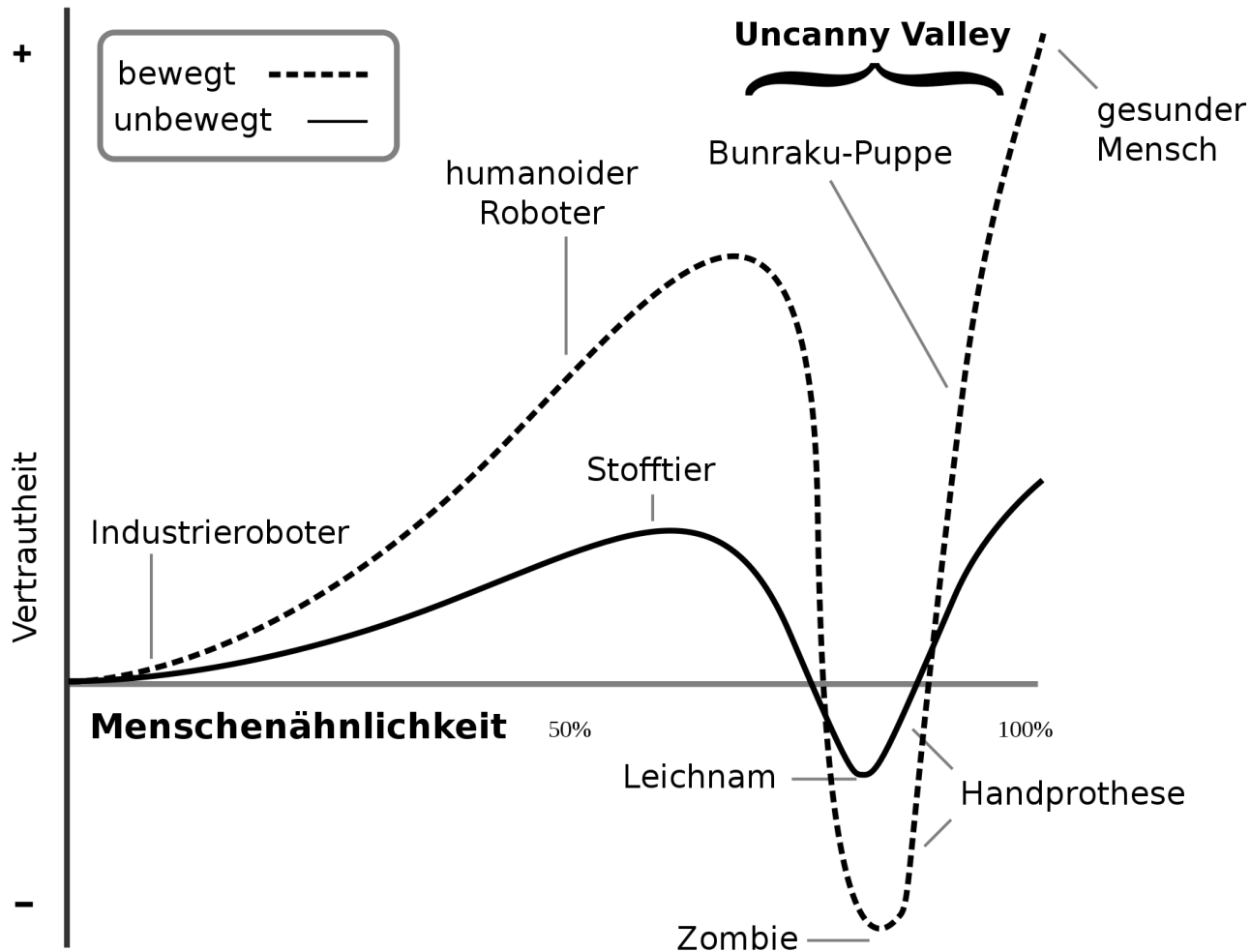














abc **nightline**

?

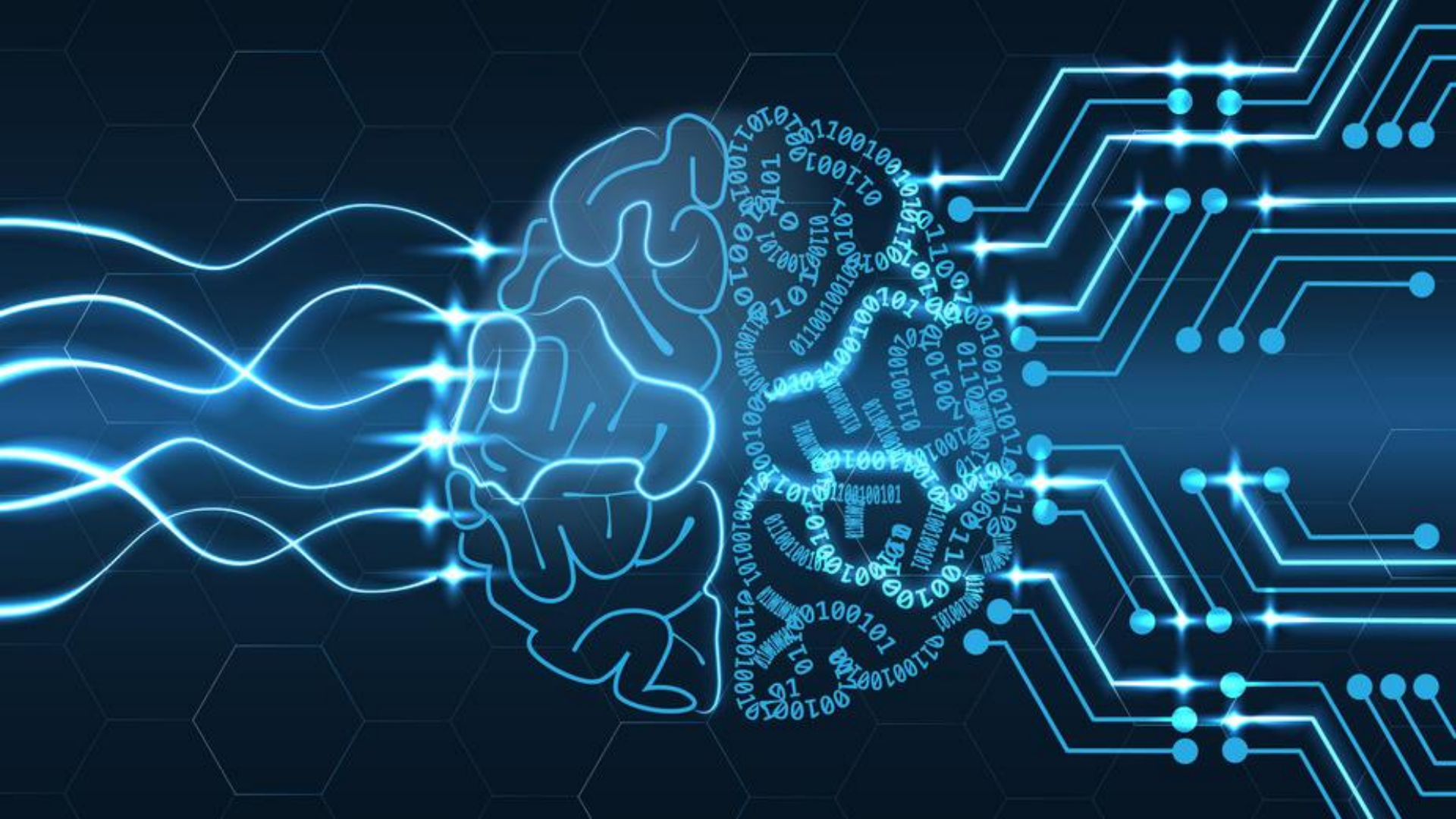
















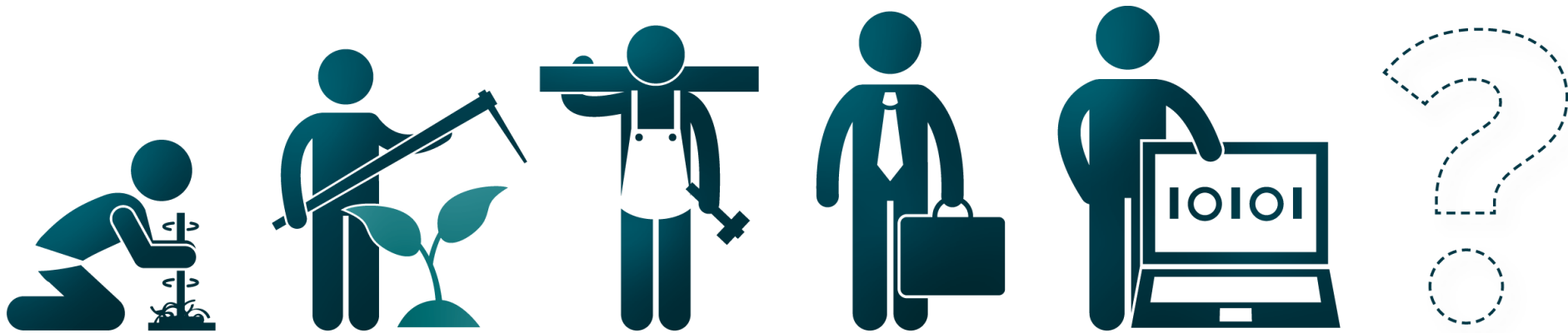
ES IS

HAVE YOU WASHED YOUR HANDS?













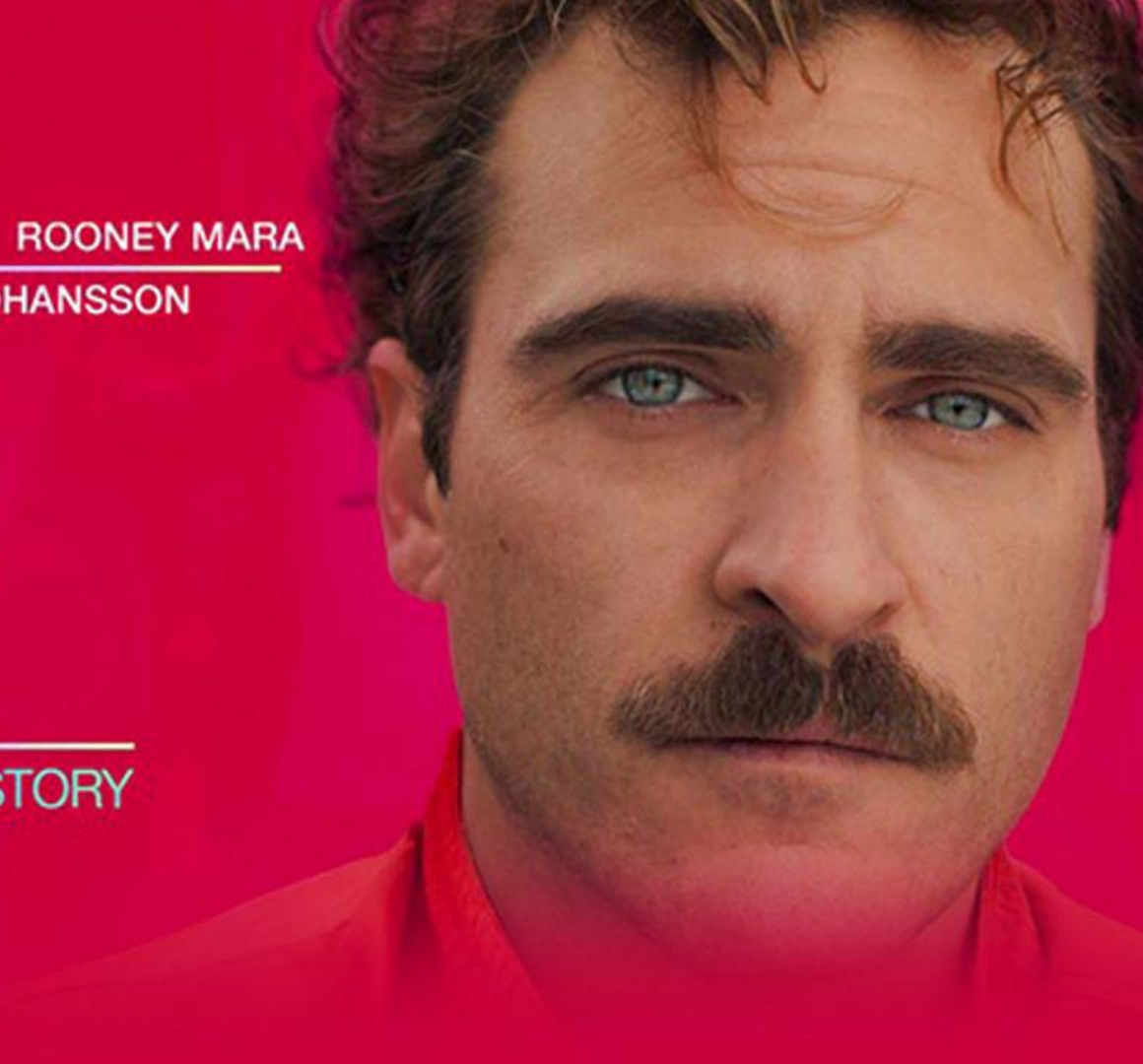


JOAQUIN PHOENIX AMY ADAMS ROONEY MARA

OLIVIA WILDE AND SCARLETT JOHANSSON

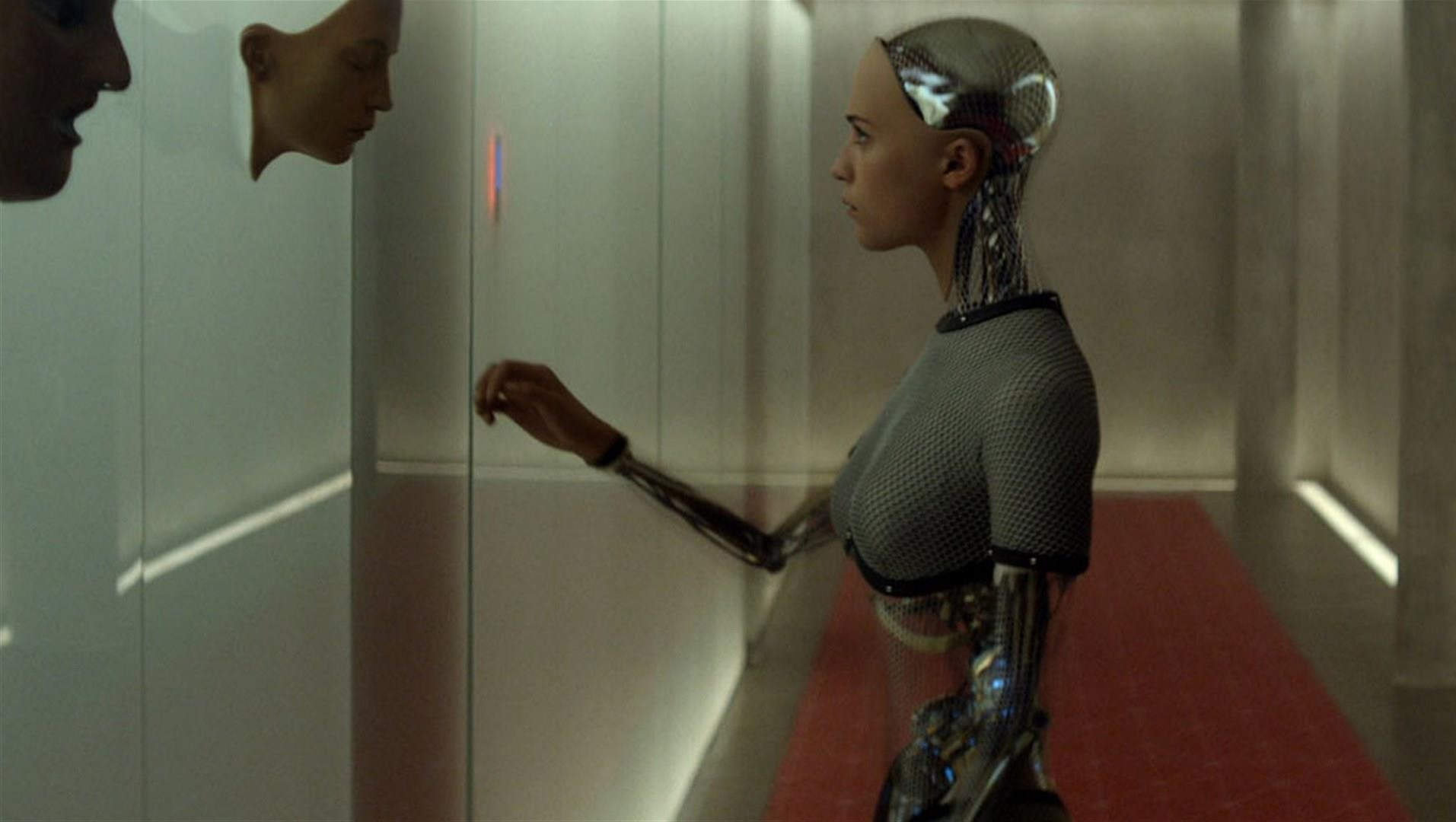
her

A SPIKE JONZE LOVE STORY



resolution: 1920x804
frame # 59983 / type: B










_room for
experiments



A man with wild white hair, wearing green goggles and a white lab coat over a plaid shirt, is holding two metal tools (possibly pliers or wire cutters) in his hands. He is looking intently at the tools. The background is a workshop or laboratory with various equipment and a blue poster on the wall.

_be curious
&
try things!



_give
guidance

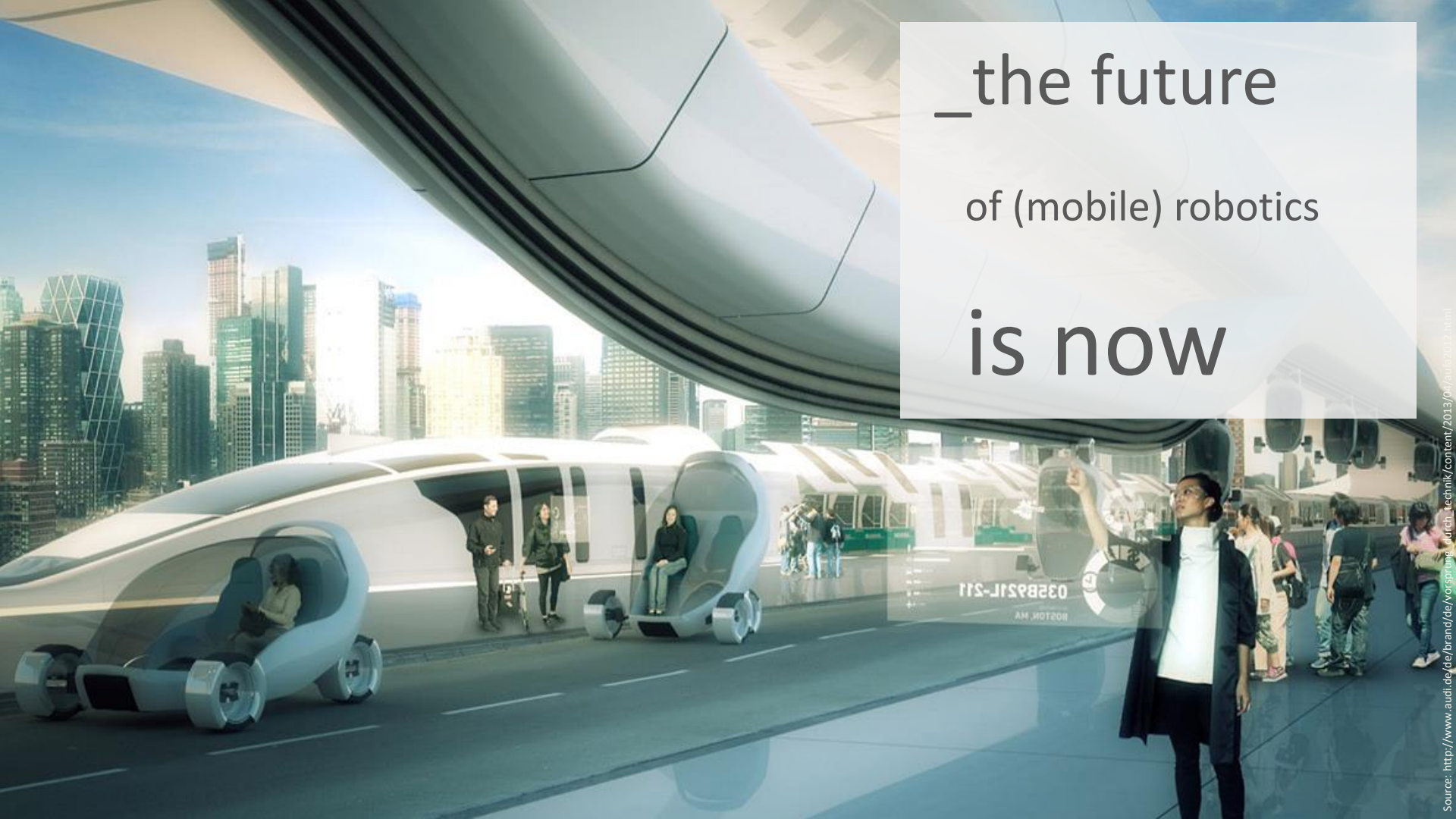



_what do
you want
to use it
for?



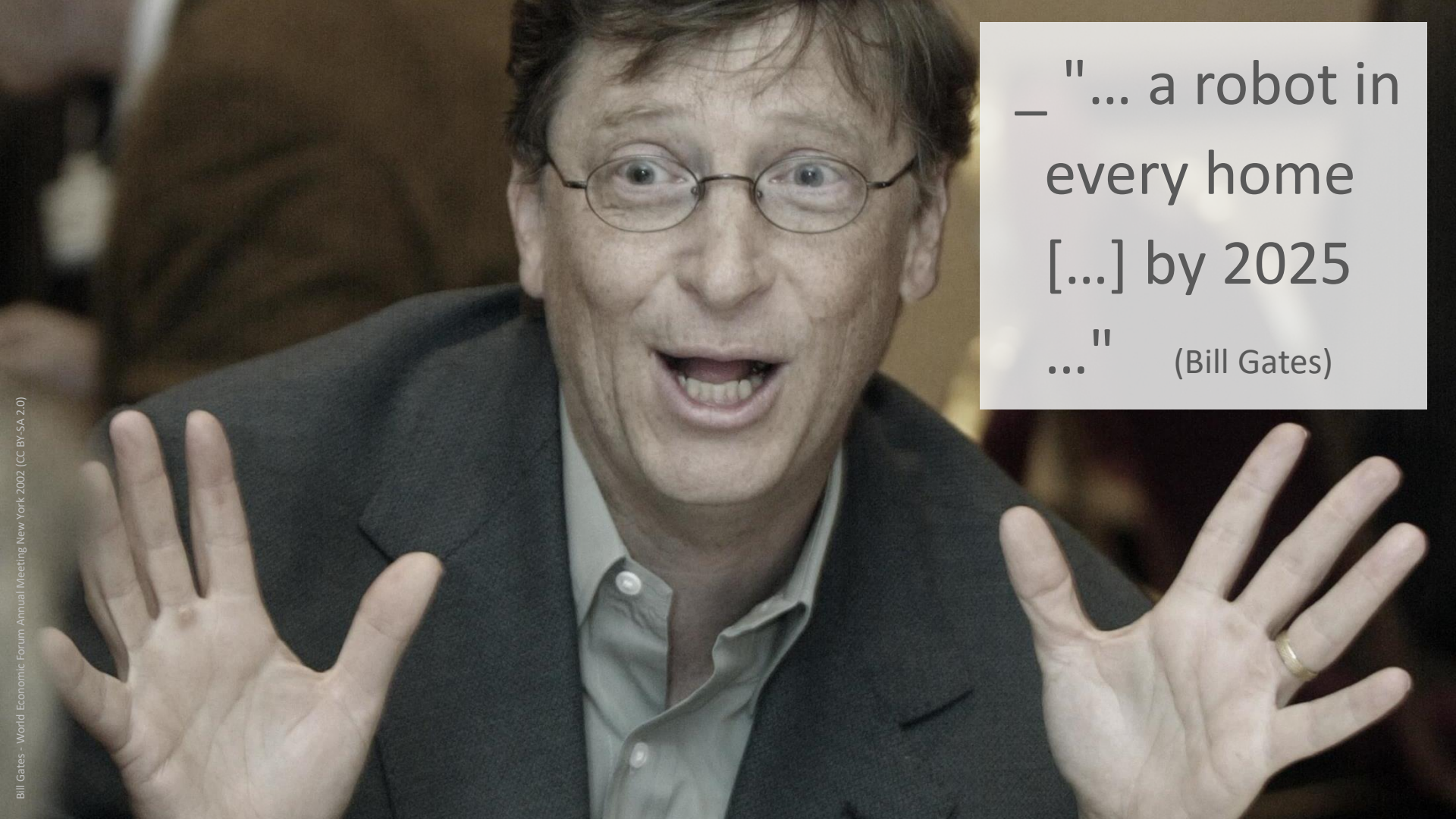
_to put it
in a
nutshell...

_the future
of (mobile) robotics
is now






_software &
ai will be
the key

A close-up photograph of Bill Gates, wearing glasses and a dark suit jacket over a light-colored shirt. He has a wide-eyed, enthusiastic expression and his hands are raised in front of him, palms facing forward. The background is blurred, suggesting an indoor event setting.


— "... a robot in
every home
[...] by 2025
..." (Bill Gates)

A young child with light skin, wearing a bright green long-sleeved shirt and light blue leggings with a pattern, is sitting on a patterned rug. The child is leaning forward, pointing their right index finger at a small, round, grey robot on a light-colored wooden floor. The robot has a black top surface with some buttons and a small display. In the background, there is a large, clear, spherical object with a pattern, possibly a water balloon or a decorative ball. The scene is indoors, likely in a living room or play area.

_our grandchildren
will grow up in
daily contact
with automation
technologies

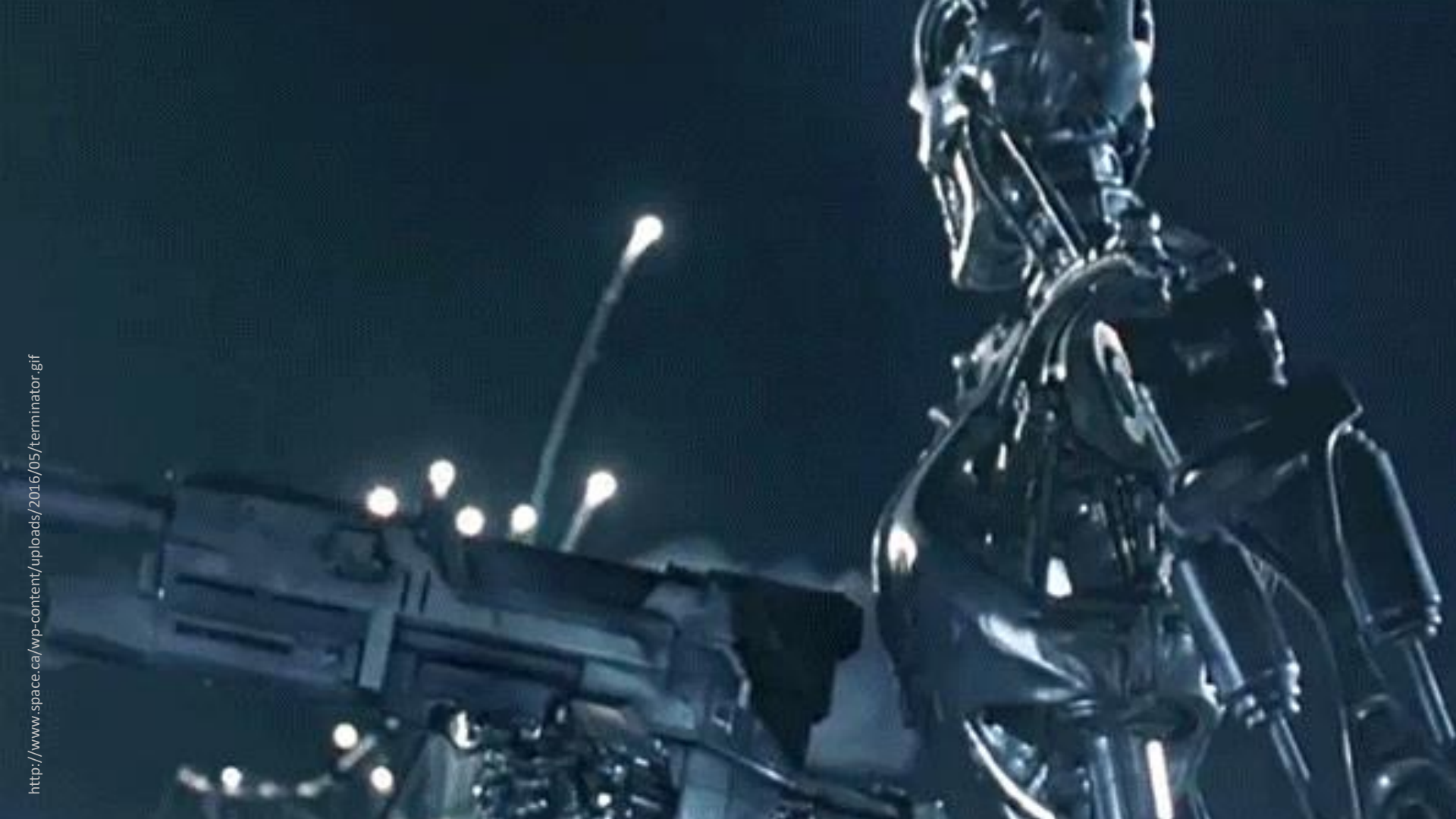
_there will be a new
Generation "R"
of Robotic Natives





■ Die ich rief, die Geister
■ verd ich nun nicht los

(Johann Wolfgang von Goethe)

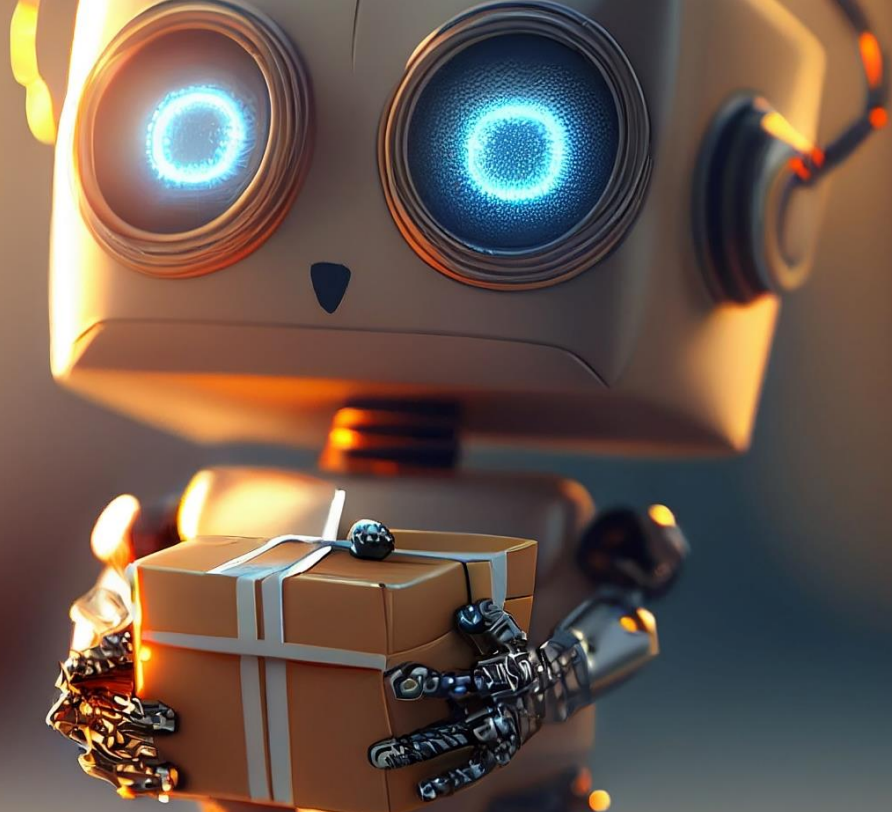




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_calculating the future



