

Education and Learning in the Era of Artificial Intelligence



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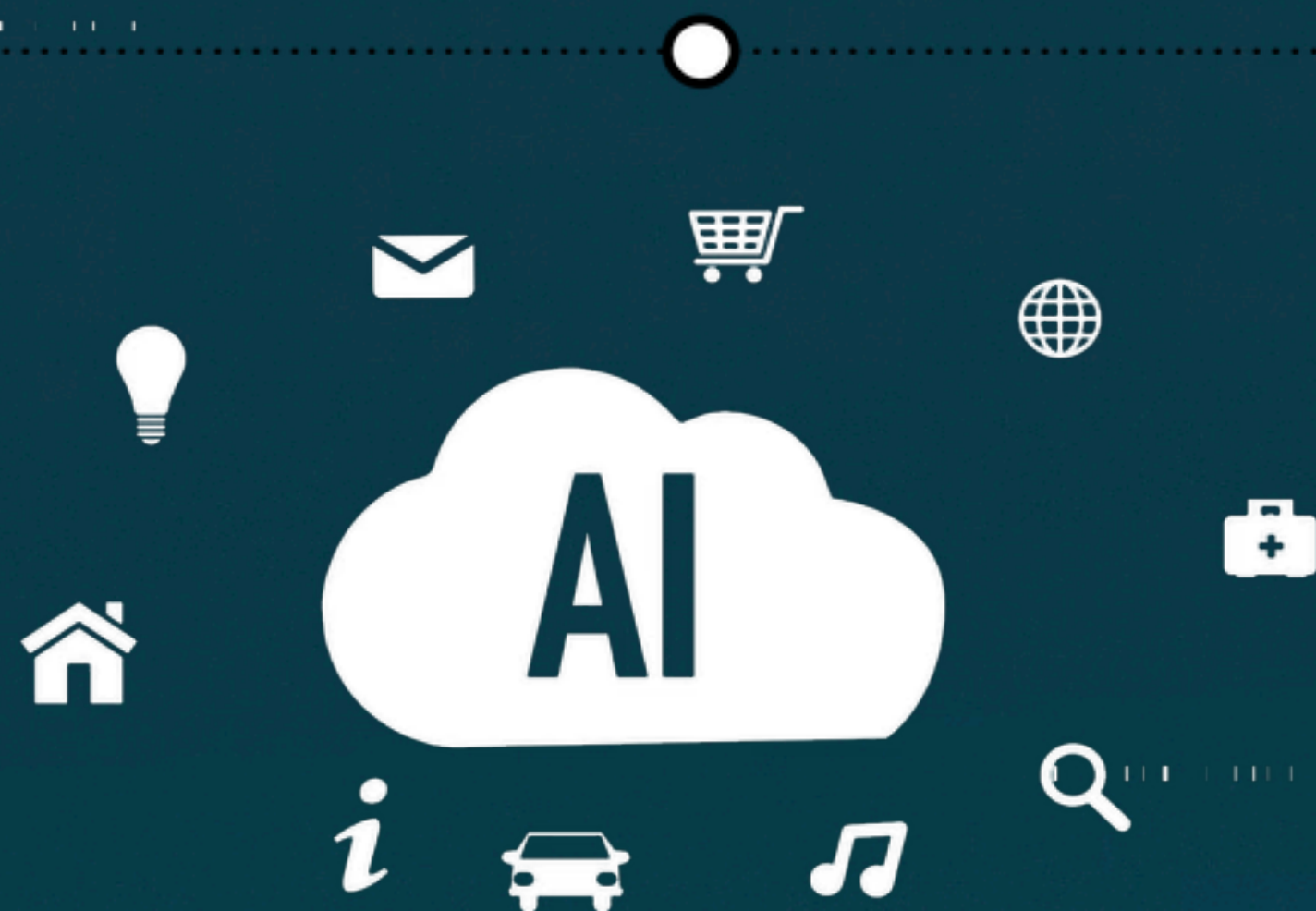
قمة الشارقة الدولية لتطوير التعليم

SHARJAH INTERNATIONAL SUMMIT
ON IMPROVEMENT IN EDUCATION

Gerd

Gerd Leonhard, Futurist
& CEO The Futures Agency

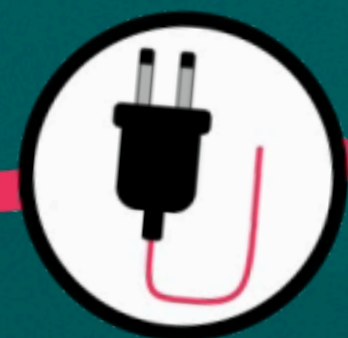
DIGITAL REVOLUTION



SUSTAINABILITY REVOLUTION



PURPOSE REVOLUTION



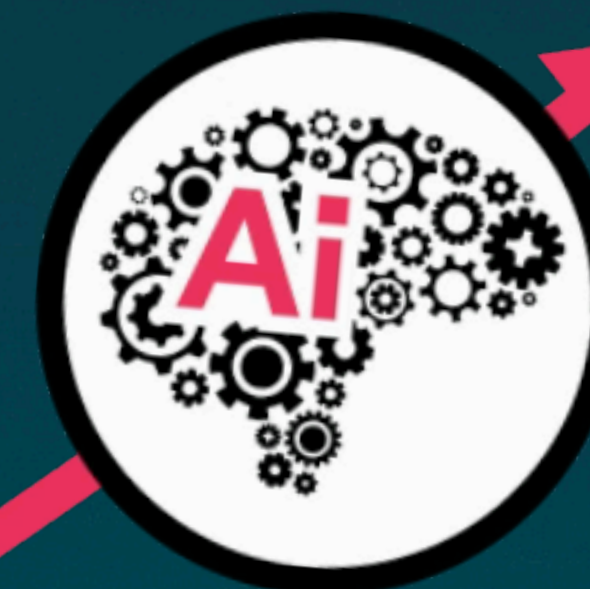
Computer
(1941)



Semi-Conductors
(1947)



Internet
(1983)



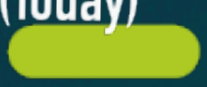
Artificial Intelligence
(Today)

PROGRESS TO THE SINGULARITY IN AI

MEASURED USING TIME TO EDIT IN MACHINE TRANSLATION



Artificial Intelligence
(Today)

-  TTE* perfect translations
-  TTE* machine translations
-  Trend

*TTE = Time to edit, the average time per word taken by a professional to correct a translation. A perfect translation's TTE is 1 second.

2015

2016

2017

2018

2019

2020

2021

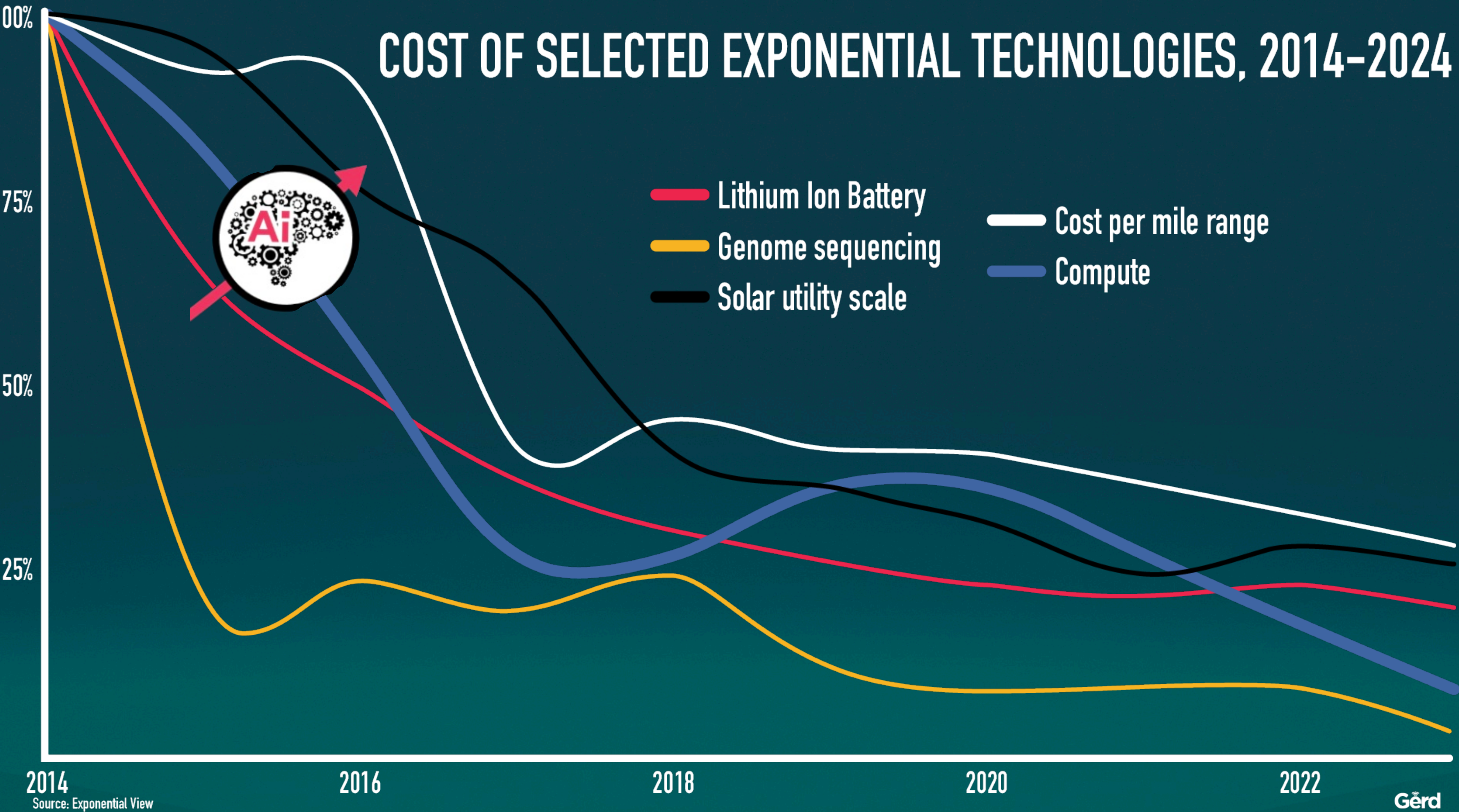
2022

2023

2024

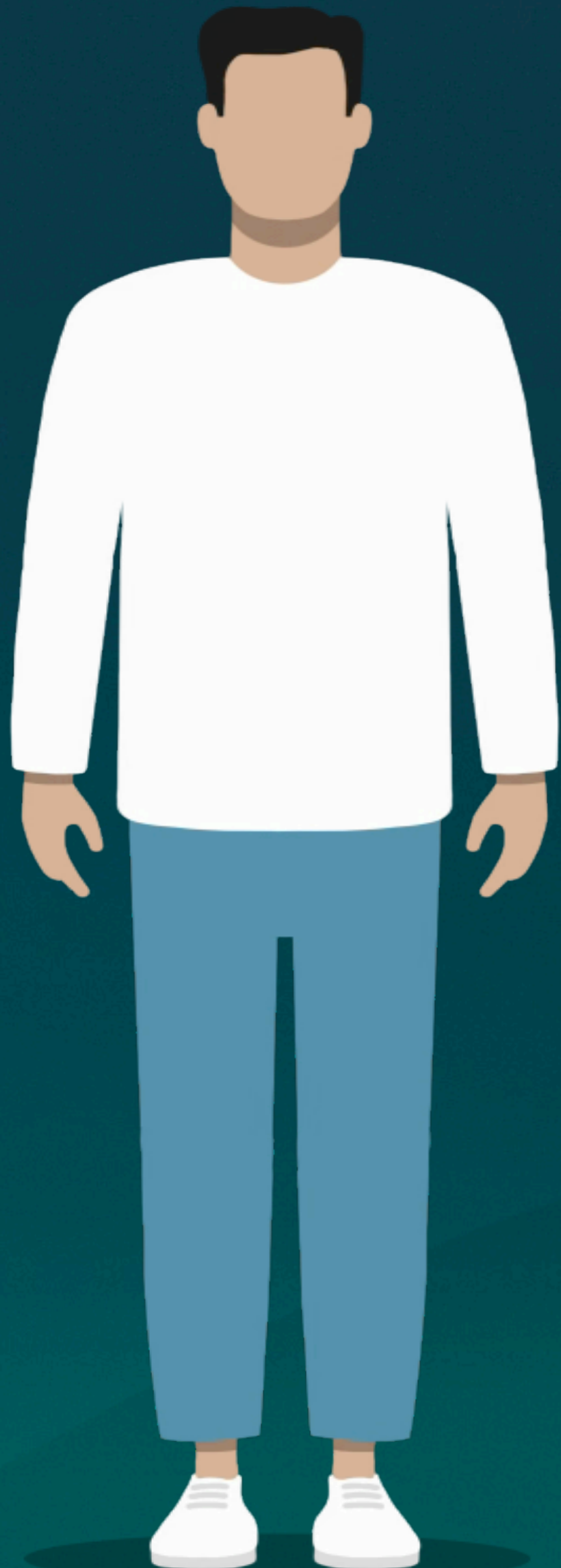
2025

COST OF SELECTED EXPONENTIAL TECHNOLOGIES, 2014-2024

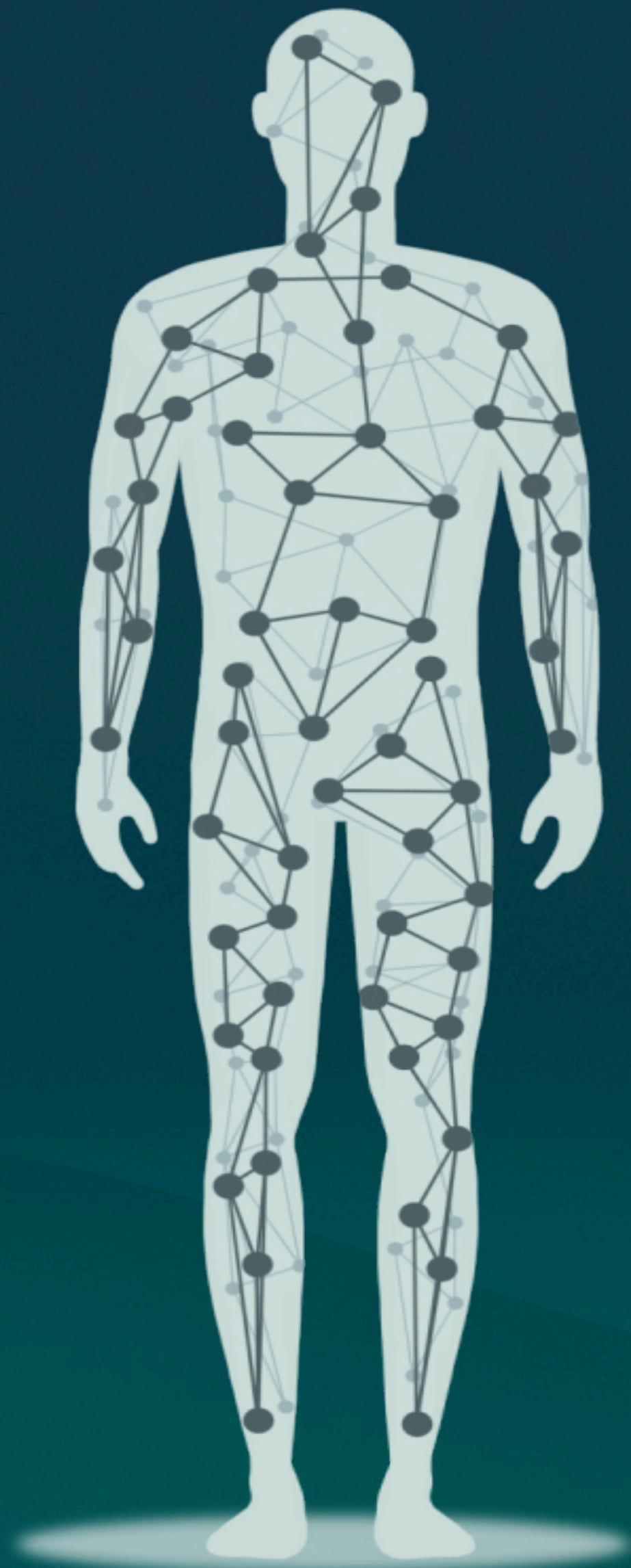




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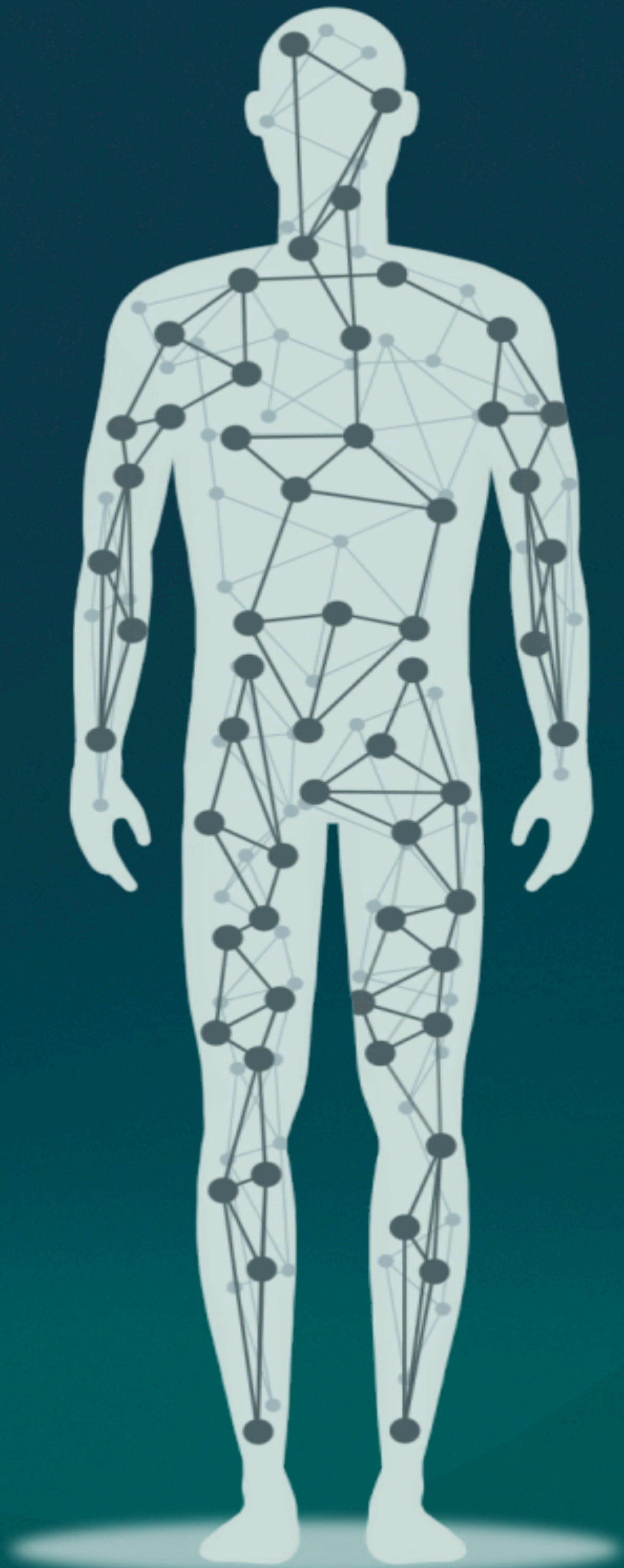
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AI: “Computer systems that turn
information and data into **KNOWLEDGE**”

(DEMIS HASSABIS, CEO, DEEPMIND)

Knowledge
Work



EXPLICIT KNOWLEDGE



Explicit Knowledge is knowledge that can easily be expressed, codified, and recorded so it can be shared



Objective, logical and technical



Codified



Easily transferable



It can be recorded and stored in physical/electronic form

Source: Document360.com

TACIT KNOWLEDGE



Tacit Knowledge is knowledge that cannot be expressed easily and often acquired from personal experience



Subjective, cognitive and experiential



Non-codified



Difficult to transfer – often requires face-to-face interaction and teaching



Can't be recorded or stored

Gërd

Knowledge Work

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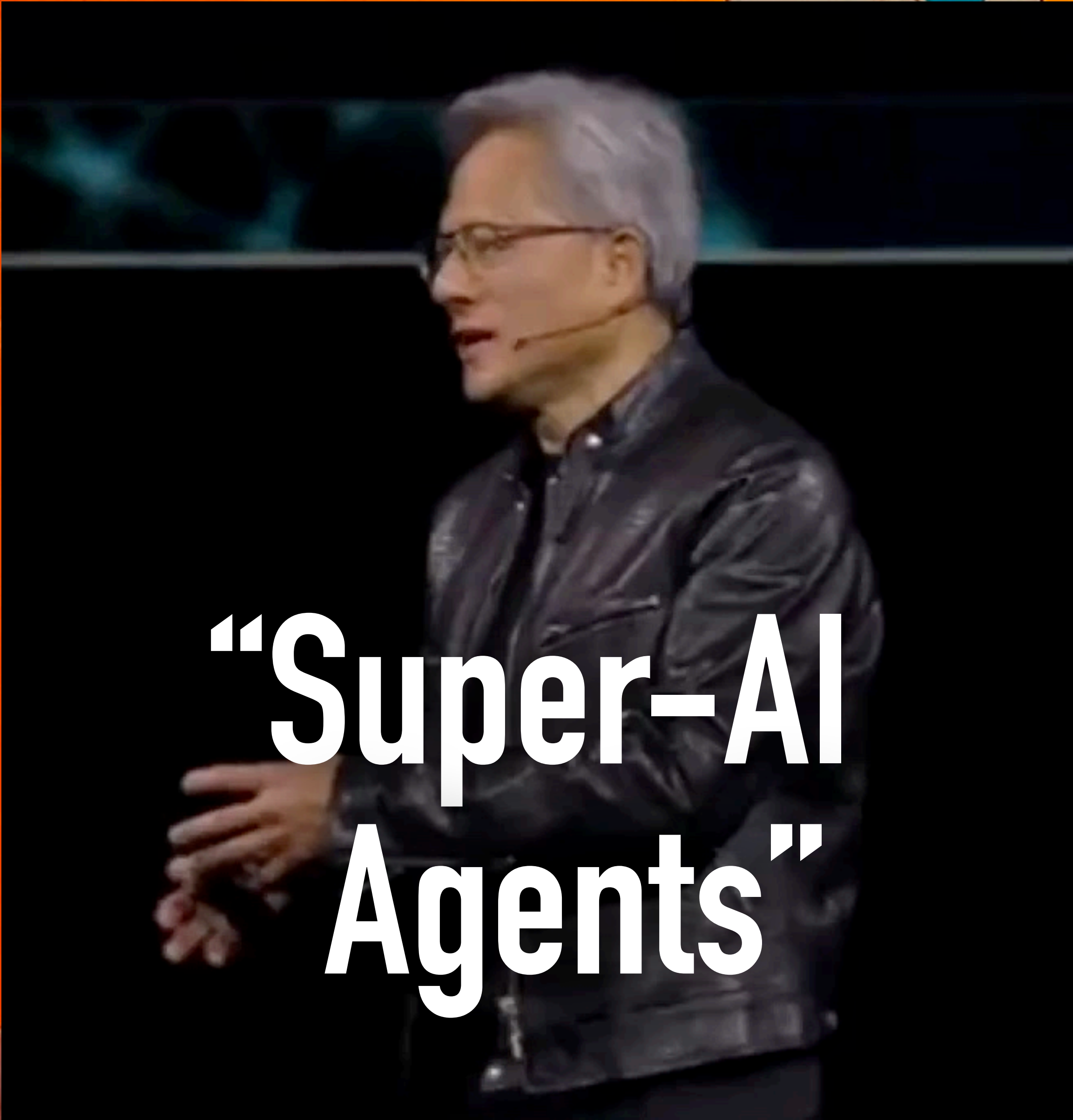
Can't be recorded or stored



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Artificial Intelligence

Knowledge Work



“Super-AI
Agents”

Jensen Huang CEO, Nvidia



“Generate Savants”

Eric Schmidt, former CEO of Google

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Intelligence $\neq$ Consciousness

Real World $>$ Data & Logic

Machines **DON'T** 'Think' or 'Feel'

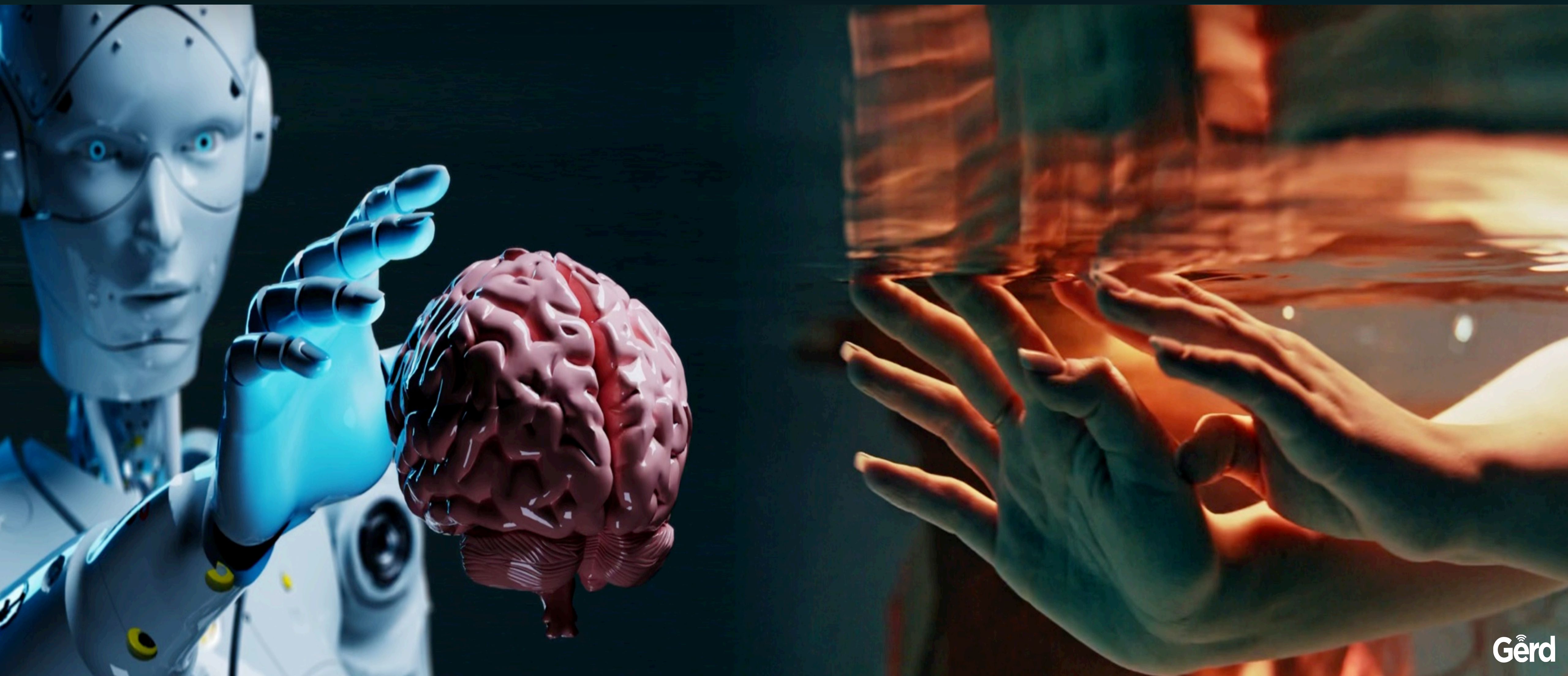
Machines **DON'T** have hunches

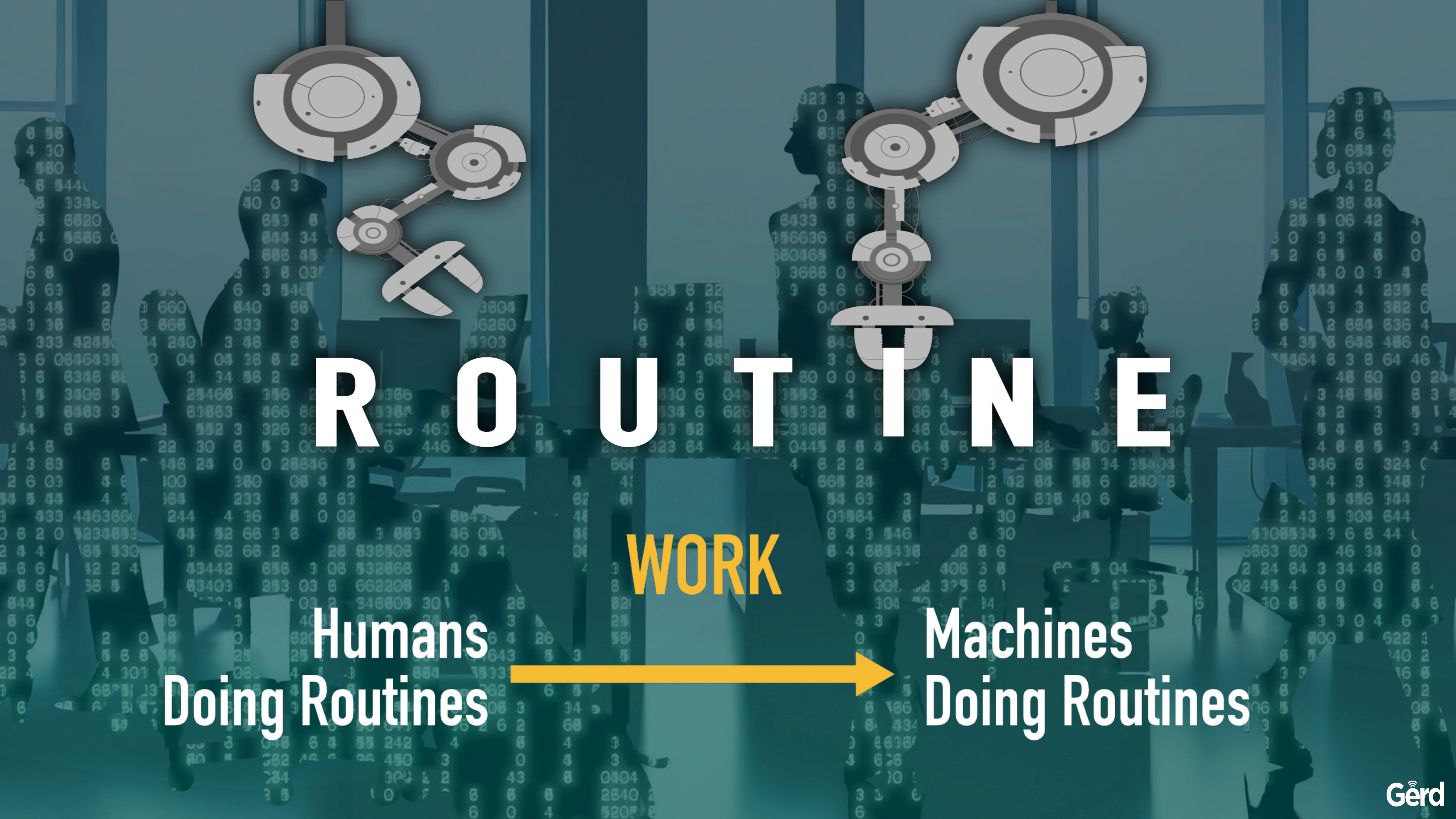
Machines **DON'T** 'understand'

Machines **DON'T** imagine

Machines **DON'T** care

INTELLIGENCE: THE ABILITY TO SOLVE PROBLEMS AND TO ATTAIN GOALS
CONSCIOUSNESS: THE ABILITY TO SUBJECTIVELY EXPERIENCE FEELINGS





ROUTINE

WORK

Humans
Doing Routines

Machines
Doing Routines



WORK

Humans
Doing Routines



Machines
Doing Routines

Plus

future of education impact of technology

Analytics

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Sources

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AI in Education in 2024: Mixed Feelings on The Tech's Future | EdTech Maga... ☒

Artificial intelligence in education: How will it impact K-12 teachers | McKinsey ☒

Future of Education Technology in 2025: Trends in Ed-Tech and Opinions of ... ☒

How Innovation is Transforming the Future of Education | BCG ☒

How technology is reinventing K-12 education | Stanford Report ☒

Q&A: How UNESCO is driving digital learning and the transformation of edu... ☒

The Future of EdTech: Are We Ready? ☒

The Future of Education: 2035 Trends ☒

The Future of Education: Balancing AI and Human Ingenuity ☒

The Future of K-12 Tech for the Connected Classroom - Nomadix ☒

The Impact of Technology on Education ☒

These are the 5 key trends shaping the EdTech ecosystem | World Economic... ☒

What Is Ed Tech (Educational Technology)? | EdTech Magazine ☒

[Taejae Future Education Forum 2023] AI and the future of K-12 public educ... ☒

apple education 2024-Impact-Report.pdf ☒

https://www.youtube.com/watch?v=vknQSc70vs ☒

Chat

future of education impact of technology

16 sources

This blog post and podcast by futurist Morris Misel discusses the impact of artificial intelligence (AI) on education. Misel argues that while AI tools present challenges, such as plagiarism, they also offer opportunities for personalised learning and administrative assistance for teachers. He advocates for a shift towards fostering creativity and critical thinking in education, balancing technological advancements with traditional teaching values to prepare students for a rapidly changing future job market. The author's past writings on the topic are also referenced, highlighting his long-standing interest in the subject. Ultimately, the piece promotes a future where AI enhances, rather than replaces, human educators.

Save to note

Add note

Audio Overview

Briefing doc

Start typing...

16 sources

How will technology reshape future learning methodologies?

How can AI enhance, not replace, human teaching?

What skills are...

Studio

Audio Overview

Deep Dive conversation

Two hosts (English only)

Customise

Generate

Notes

+ Add note

Study guide

Briefing doc

FAQ

Timeline

Saved notes will appear here

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NotebookLM can be inaccurate; please double-check its responses.

Gerd

Plus

future of education impact of technology

Analytics

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Start typing...

16 sources

How will technology reshape future learning methodologies?

How can AI enhance, not replace, human teaching?

What skills are needed for the future of work?

NotebookLM can be inaccurate; please double-check its responses.



Chat



Studio

Audio Overview



Generating conversation...

This may take a few minutes. No need to stick around!

Notes



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simulations 4. They can also create their own interactive 360-degree scenarios 12. AI integration into these simulations will allow students to ask questions and receive answers 14.

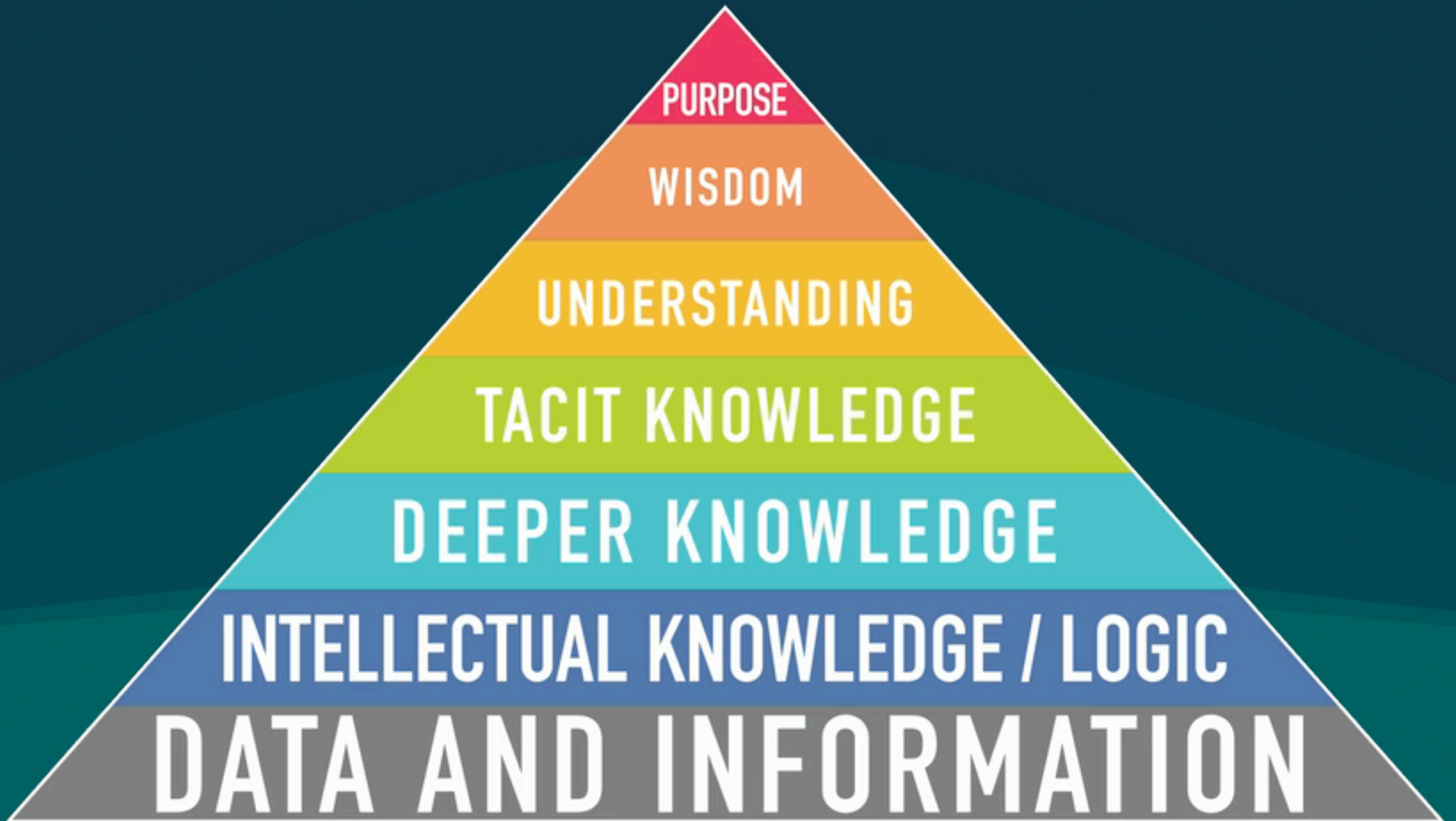
- **Gamification:** Learning activities will increasingly incorporate game-like elements 14 . This can motivate students through rewards, though educators should be mindful that rewards tied to specific activities may not generalise to other learning contexts 14 . Educators are encouraged to use play patterns that reward students for rethinking approaches and adapting strategies, rather than just quick, correct responses 15 .
- **Shift in Teaching Roles:** Teachers' roles will evolve from instructors to facilitators and coaches 16 Technology will automate some administrative and preparatory tasks, freeing up teachers to focus on direct instruction, coaching and mentoring and building relationships 17 This includes using technology to assess student understanding and provide feedback 21 Teachers will be able to use AI to simplify lesson planning and automate menial tasks 24 .
- **Focus on 21st-Century Skills:** Future learning will emphasise critical thinking, problem-solving, collaboration, and digital literacy 7 Collaborative learning, where students work in small groups on complex tasks, will also be prioritised 27 Students will learn to question, critique, and understand the development and use of AI 30
- **Increased Access and Equity:** Digital tools and platforms can break down geographical barriers, providing access to educational resources for all students, regardless of their socioeconomic status or location 32 Technology can also support diverse learners by offering features such as translation and speech-to-text 23 . It can provide more flexibility in learning, accommodating different schedules and preferences 34 .
- **Data-Driven Insights:** Technology allows for the collection of detailed data on student learning activities 15 This data can reveal areas of struggle and learning opportunities 15 . Educators need to be able to access and analyse this data to make informed decisions about instruction 35 .
- **Lifelong Learning:** Continuous education and upskilling will be essential 4 Learning will need to be flexible and adaptable to different life phases and job demands 36
- **Hybrid models** combining in-person instruction with online learning are likely to become more common 38 .
- **AI as a tool, not a replacement:** The sources emphasise that technology, including AI, is a tool to support and enhance education, not replace teachers or human interaction 39
- **Importance of Teacher Training:** To effectively integrate technology, teachers will need training and support 16 This includes training on new technologies, pedagogical approaches, and how to adapt to new teaching methods 16
- **Ethical Considerations:** Privacy and cybersecurity will be important concerns as schools collect and use student data 33 Schools will need to establish guidelines for the ethical use of technology 52 .
- **Emphasis on Practical Application:** Learning should be experiential, interdisciplinary, and focused on real-world problem solving 18 This includes hands-on projects and collaborative tasks 53 .
- **Community Engagement:** Learning environments should foster a sense of community and belonging 54 Technology can be used to connect with families and communities 47
- **Focus on 'why' and 'how':** When adopting new technologies, it's essential to focus on the pedagogical value, and not simply the "wow" factor 57 .

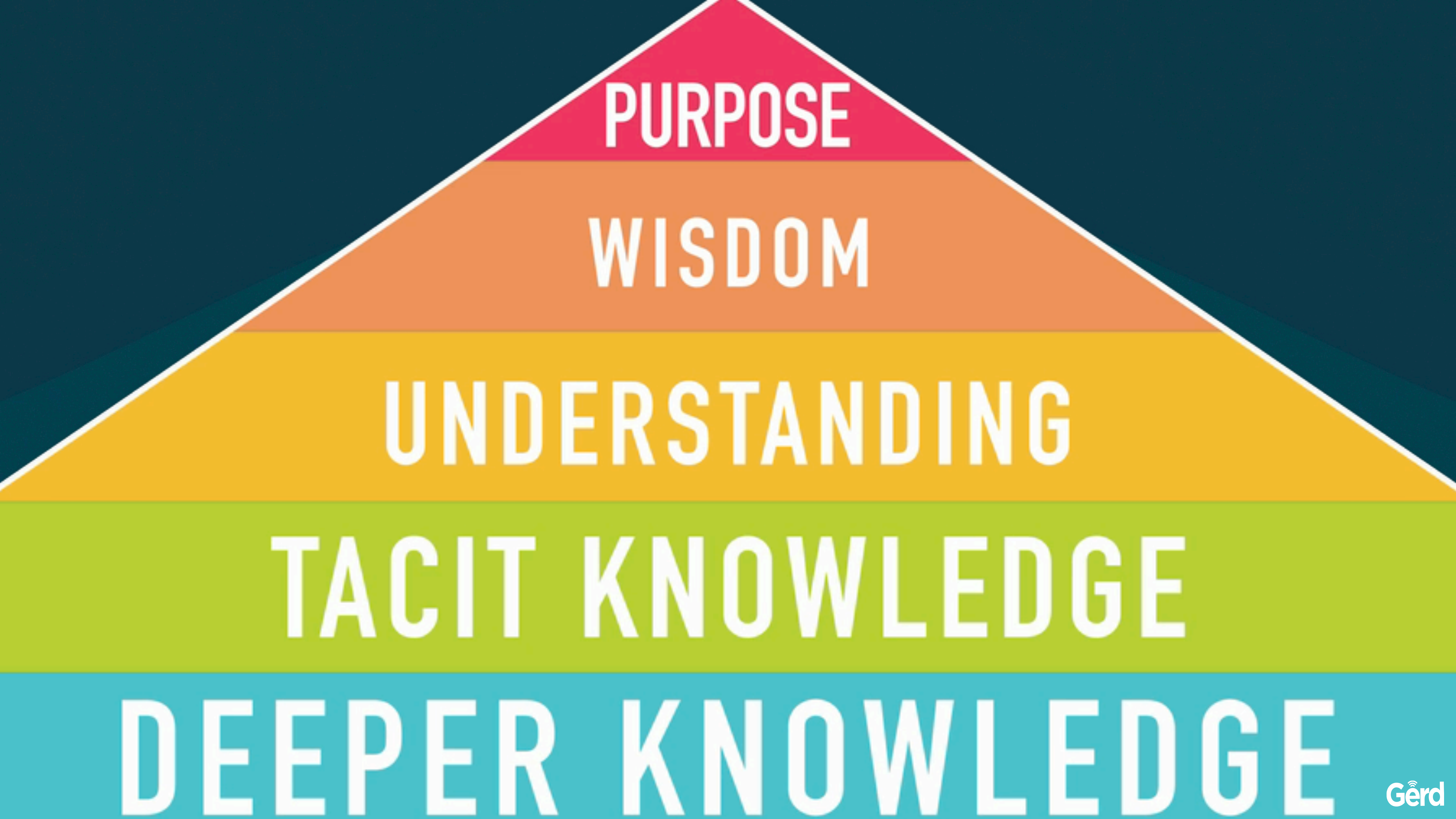
It is important to note that effective integration of technology into education requires careful planning, teacher training, and a focus on pedagogy, not just the technology itself (16). There should be an emphasis on ethical considerations, including data privacy and equitable access (33).



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PURPOSE

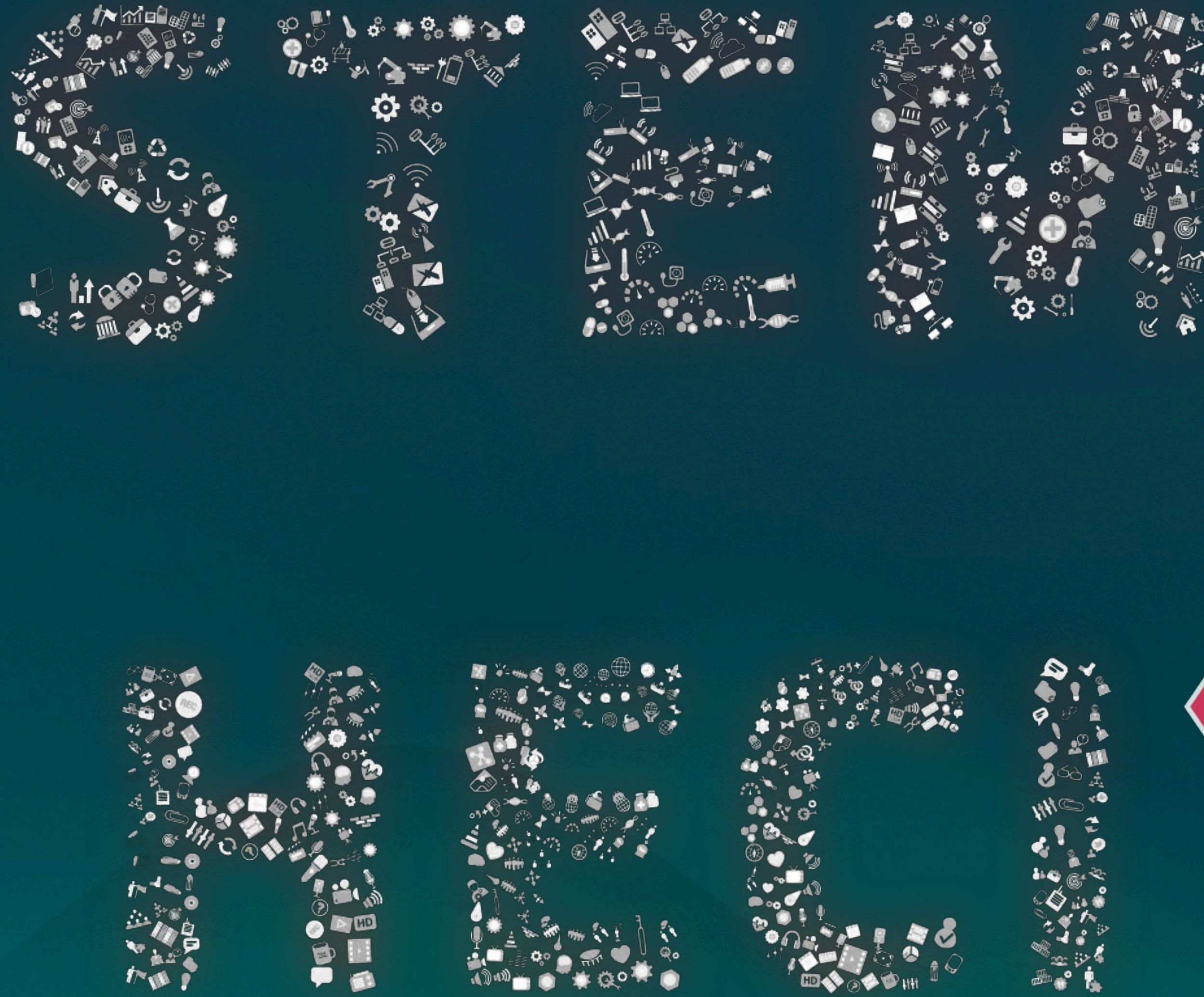
WISDOM

UNDERSTANDING

TACIT KNOWLEDGE

DEEPER KNOWLEDGE

SCIENCE.
TECHNOLOGY.
ENGINEERING.
MATHEMATICS.
HUMANITY.
ETHICS.
CREATIVITY.
IMAGINATION.



PURPOSE

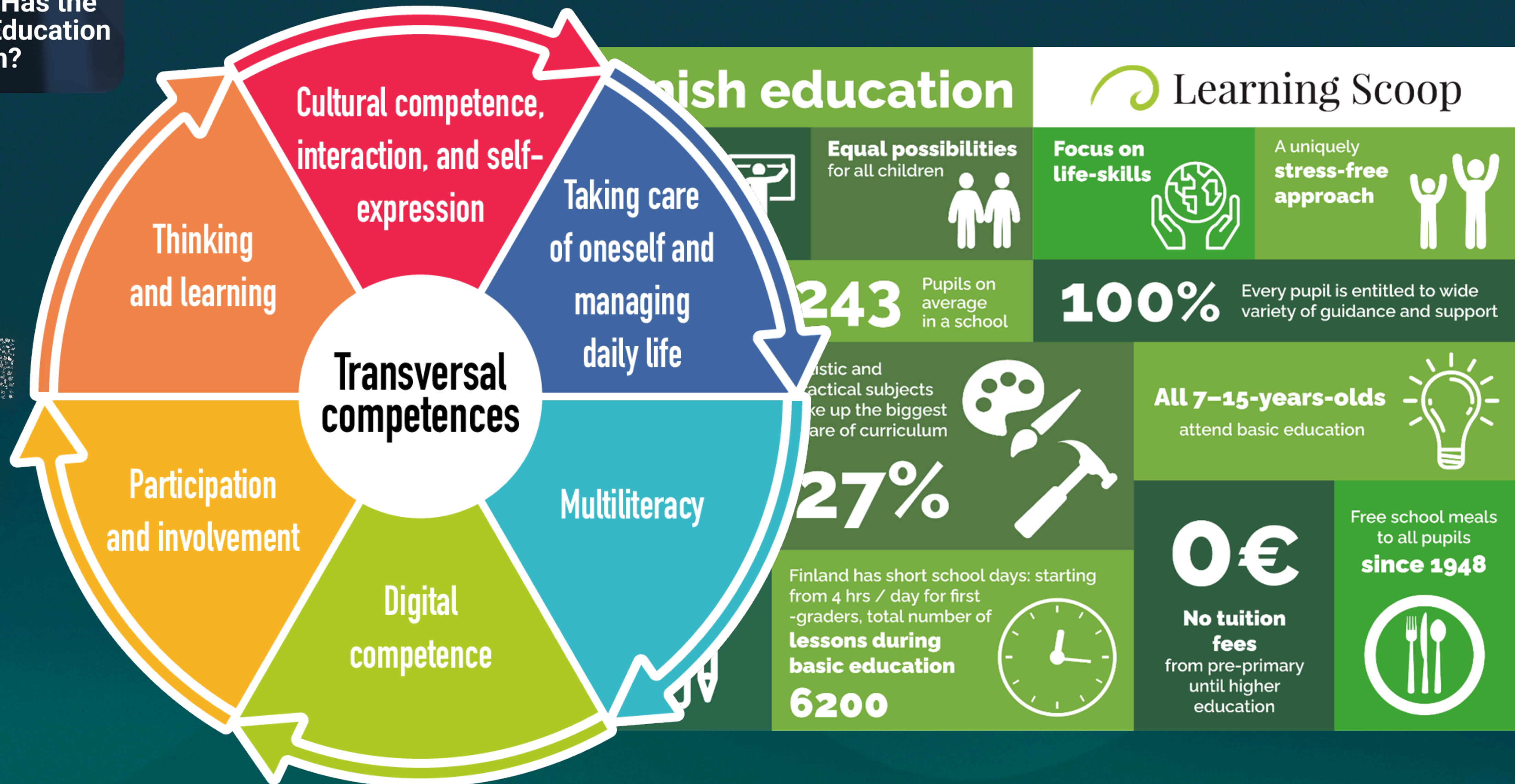
WISDOM

UNDERSTANDING

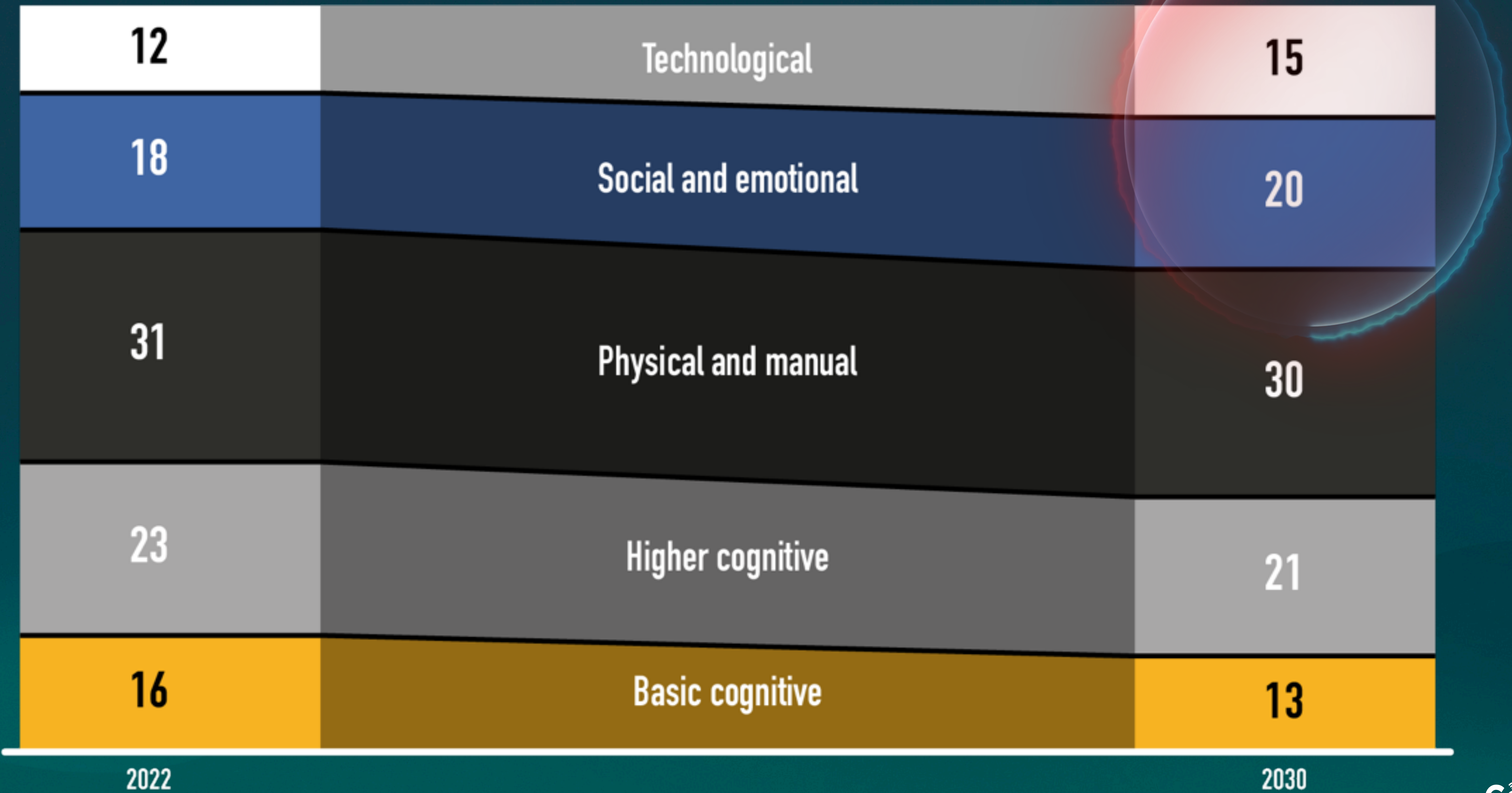
TACIT KNOWLEDGE

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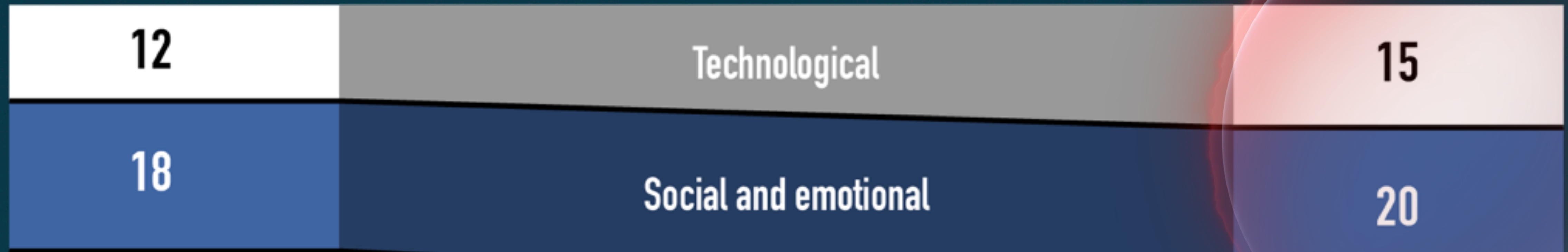
How Finland Has the World's Best Education System?



Skills mix in Europe, share of total hours, %

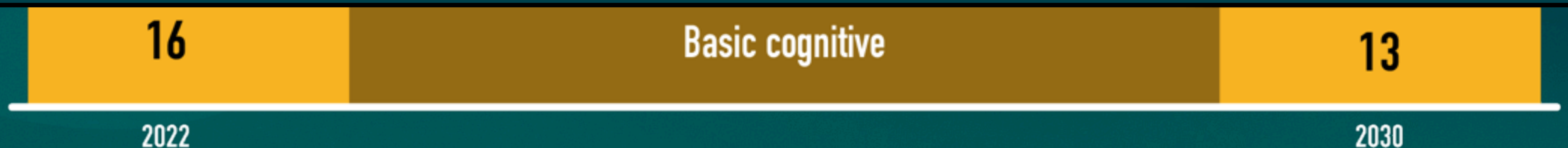


Skills mix in Europe, share of total hours, %



“One machine can do the work of fifty ordinary (wo)men.
No machine can do the work of one extraordinary (wo)man”

Elbert Hubbard (1901)



If you work like a robot, a robot will take your job!

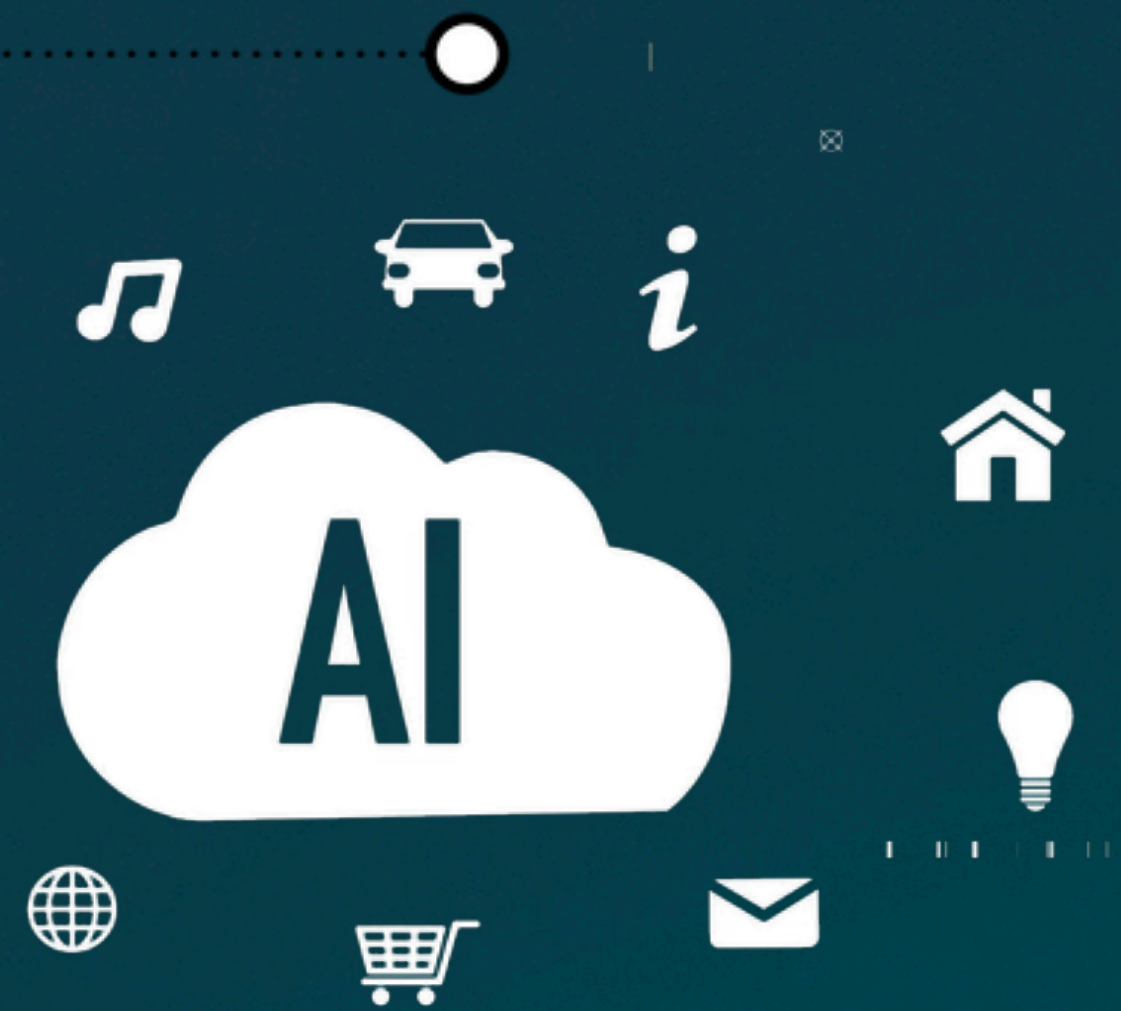




... a robot will take your job*

AI's Impact on education: benefits and action items

DIGITAL
REVOLUTION

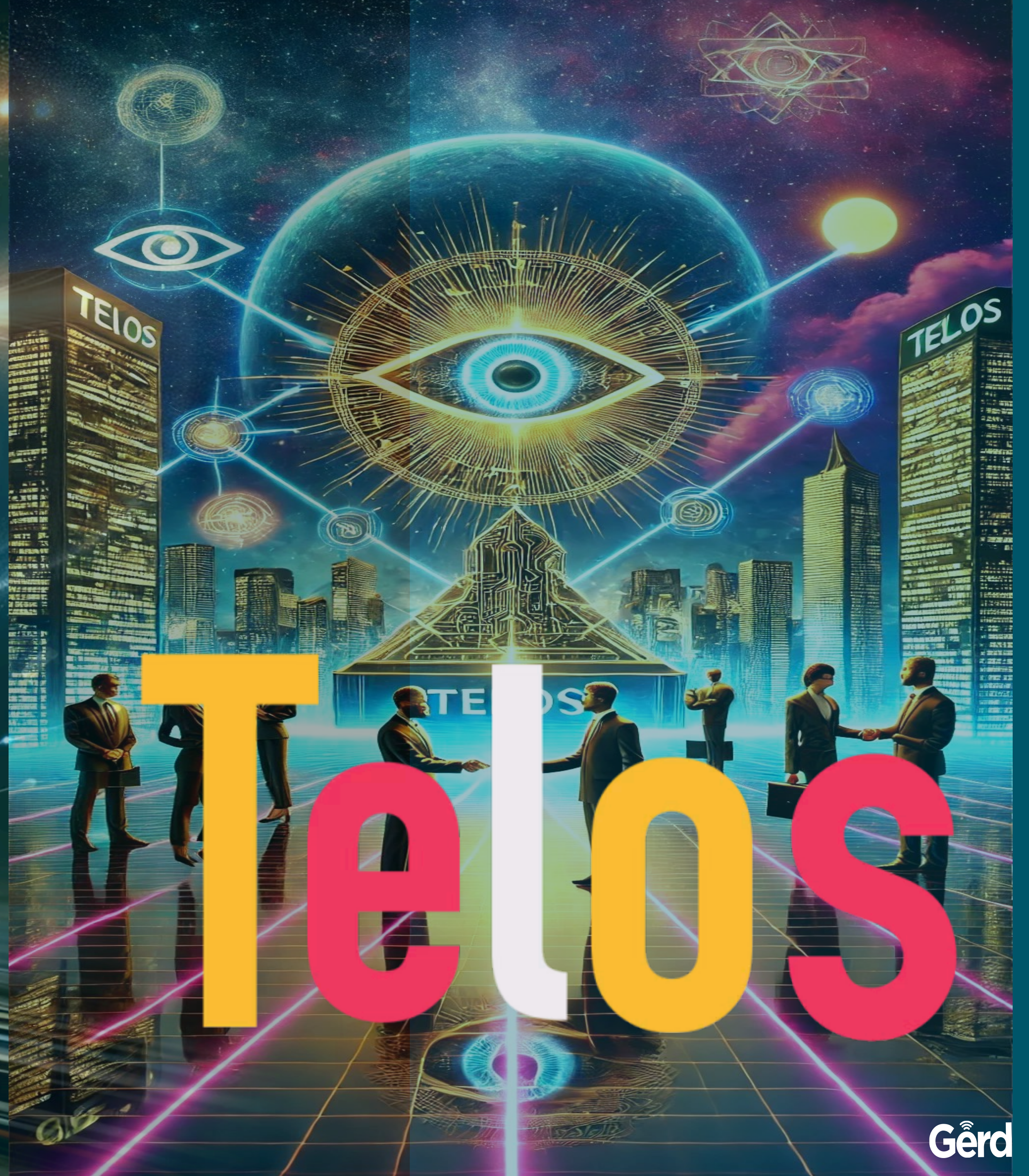


1. The world's knowledge at your fingertips (again)
2. Hugely increased availability and access (translation!)
3. Easy personalisation and customisation, anywhere
4. Hybrid learning becomes default (digital ☯ physical)
5. Dramatic rise in new jobs: remote, cloud-based work

1. We must take education beyond routines, data & knowledge: STEM **and** HECL
2. We must go beyond explicit 'skills' towards developing character traits & mindsets
3. Move towards just in-time learning (not just in-case), life-long & vocational
4. Beware of over-reliance on machine 'intelligence': dumbing down, abdication
5. Keep AI's limitations in mind: no common sense, bias, manipulation, reductionism



Tools



Telos

Thanks for your attention – and more after the break!



techvshuman.com



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Gerd Leonhard, Futurist
& CEO The Futures Agency



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