

# **Digitalization by Design: Challenges for GMS Development and Cooperation**

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MEKONG FORUM, KHON KAEN  
31 JULY 2024

# OUTLINE

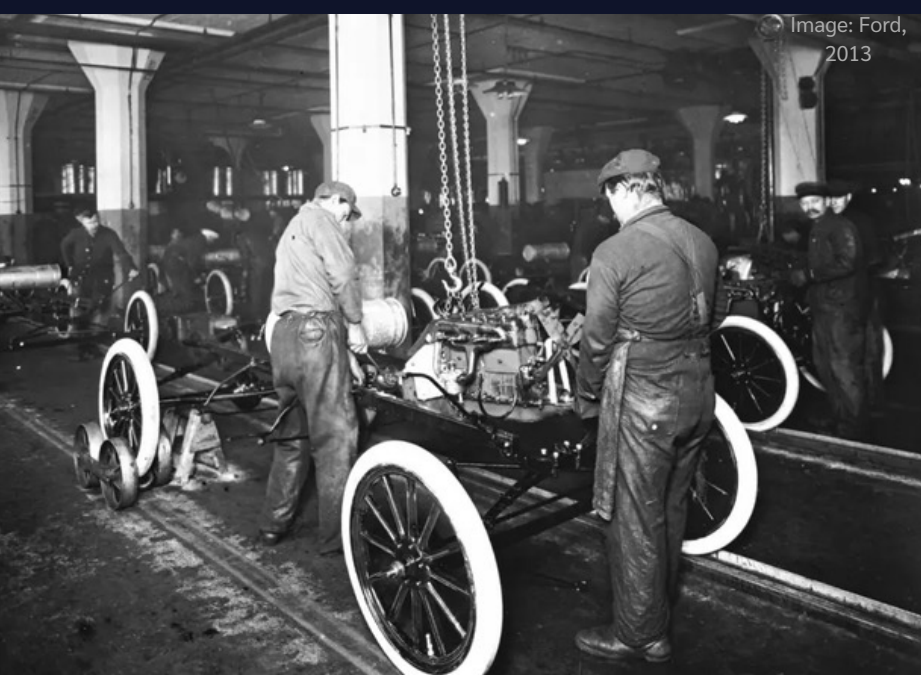
- Digitalization # Industrialization
- Evolution/ Revolution of Digital Technology
- Digitalization by Design
- Global Challenges & Socio-Economic Impacts
- DT Missions and Actions
- Implications for GMS Cooperation





# I) Digitalization # Industrialization

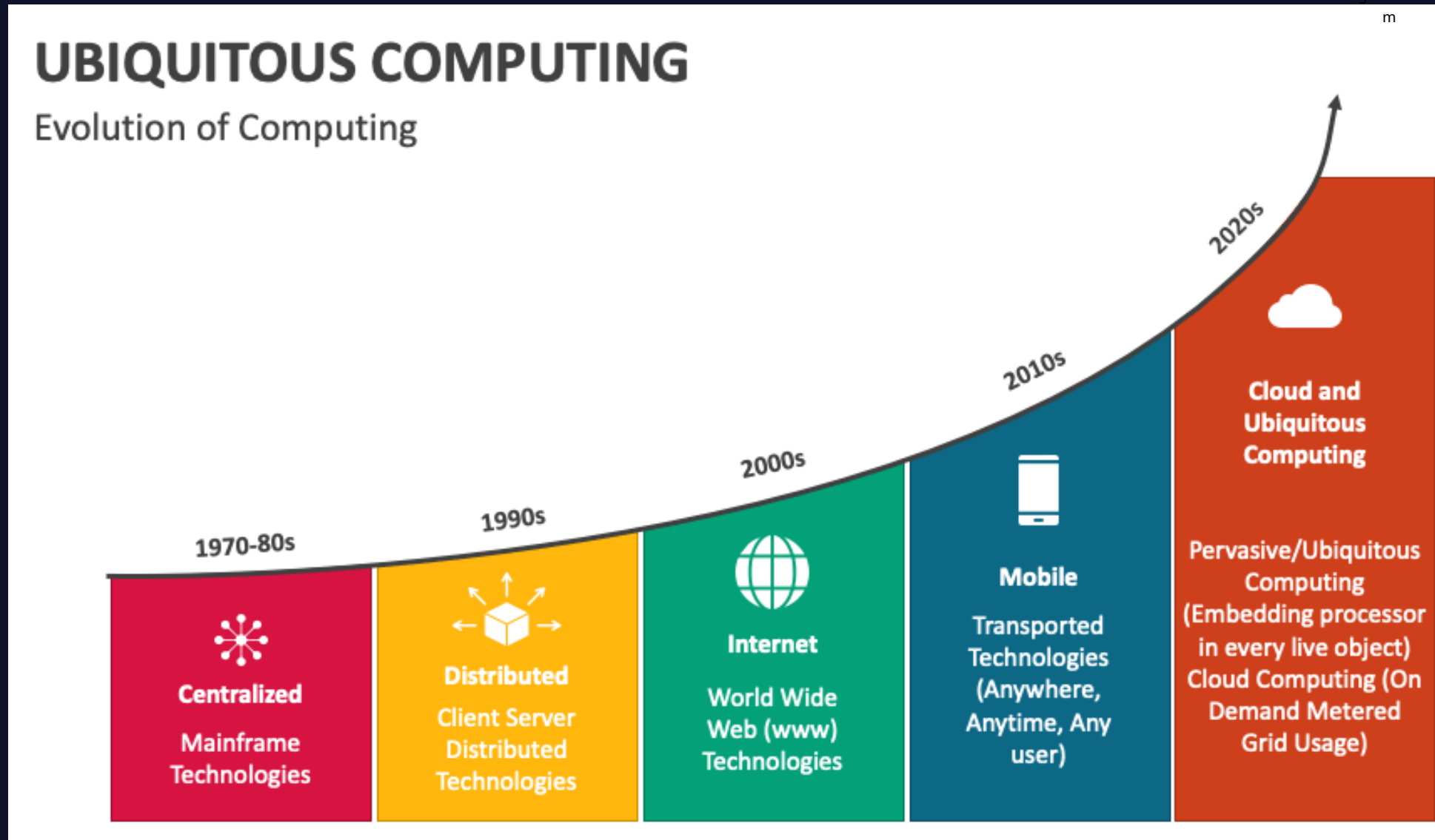
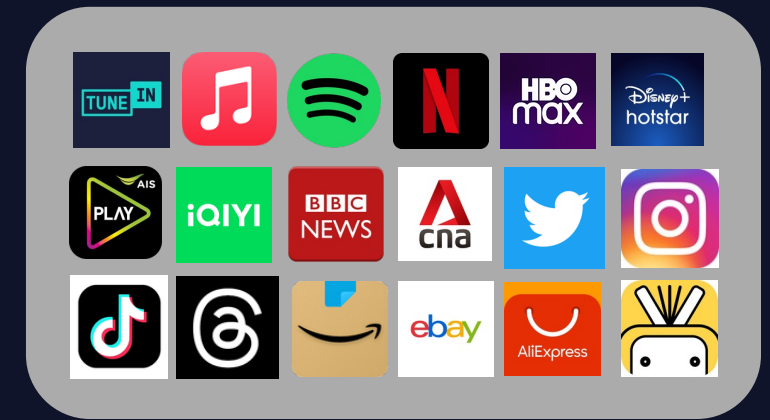
- Digitalization is transforming the world just as Industrialization did starting from the 1900s.
- Mechanization+ Electrification brought advancement to humanity but were also used as weapons.
- Industrial Development has improved the quality of life, but it has also created Global and National Challenges to the present.



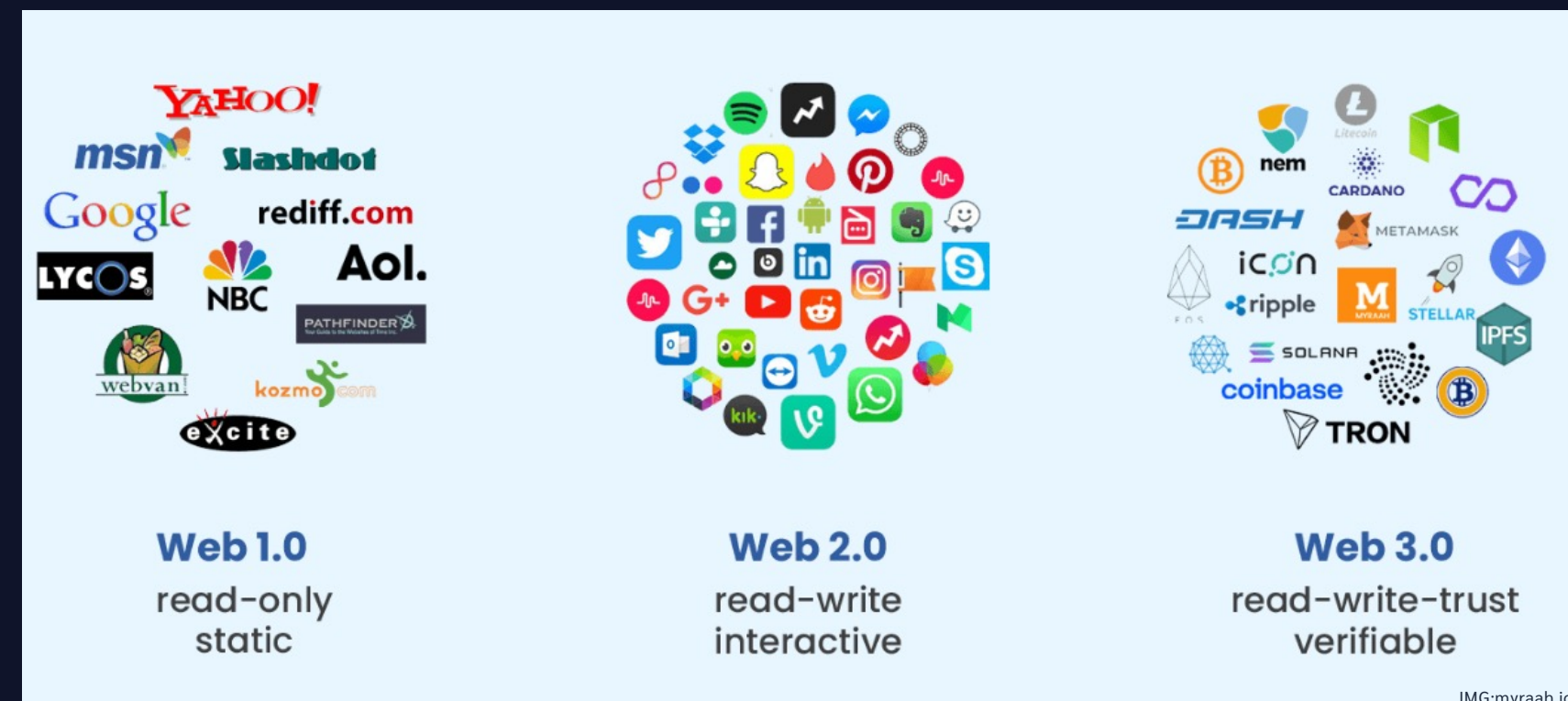


# II) Evolution + Revolution of DT

-DT with Internet access through Cloud Computing, enabling connectivity across all online channels.



	1G	2G	3G	4G	5G
era	1980s	1990s	2000s	2010s	2020s
services	analog voice	digital voice messages	WB voice packet data	voice, video Internet, apps	communicating <i>things</i>
devices					
data rate	0	100 kbps	10 Mbps	100 Mbps	10 Gbps
delay		500 ms	100 ms	10s of ms	<5 ms





# II) Evolution + Revolution of DT

- AI
  - AR (Augmented Reality)
  - VR (Virtual Reality)
  - ML (Machine Learning)

=> Generative AI =>?

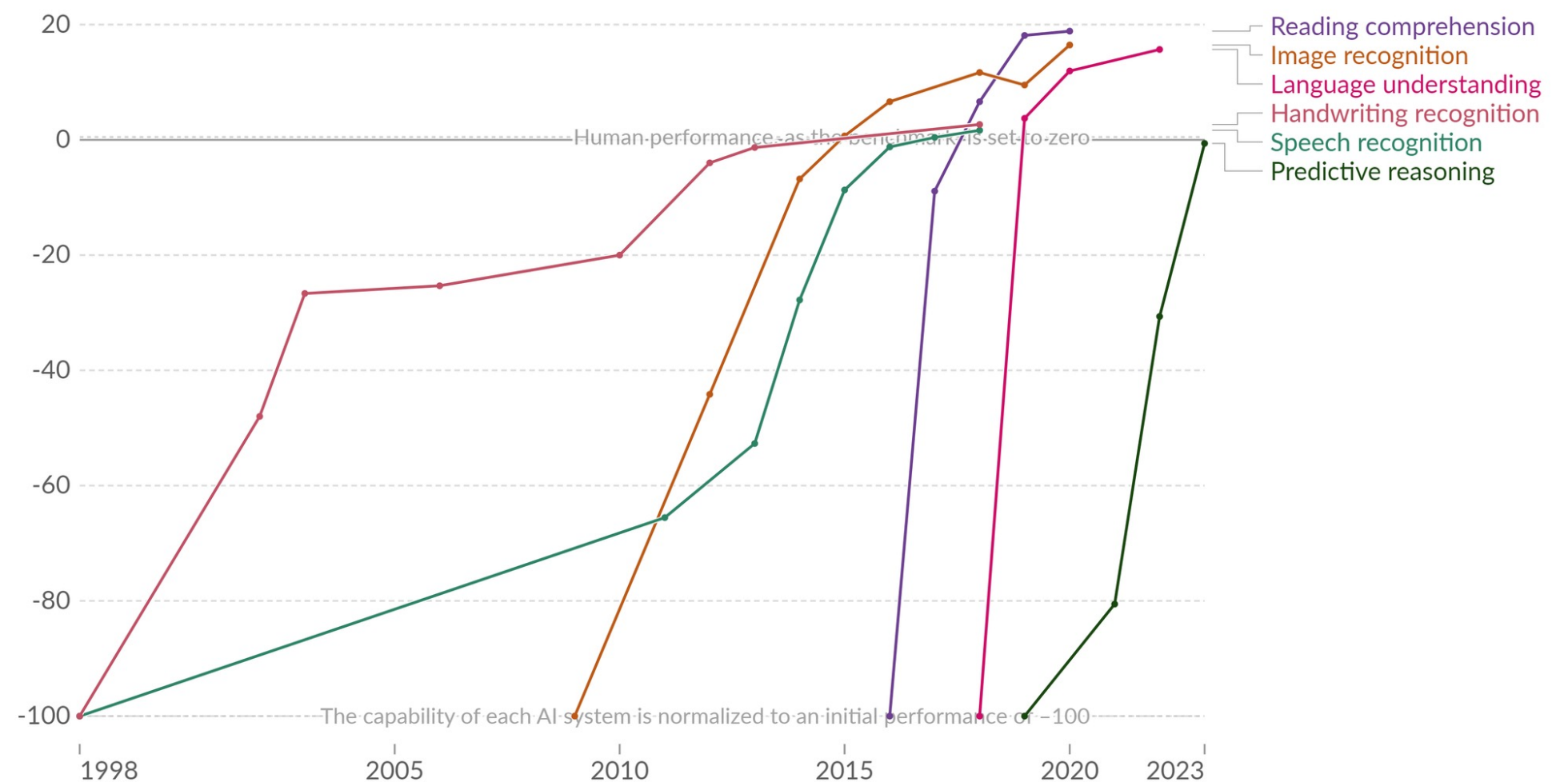


Virtual model of Puey Noi Architecture, Khon Kaen

## Test scores of AI systems on various capabilities relative to human performance

Our World  
in Data

Within each domain, the initial performance of the AI is set to -100. Human performance is used as a baseline, set to zero. When the AI's performance crosses the zero line, it scored more points than humans.



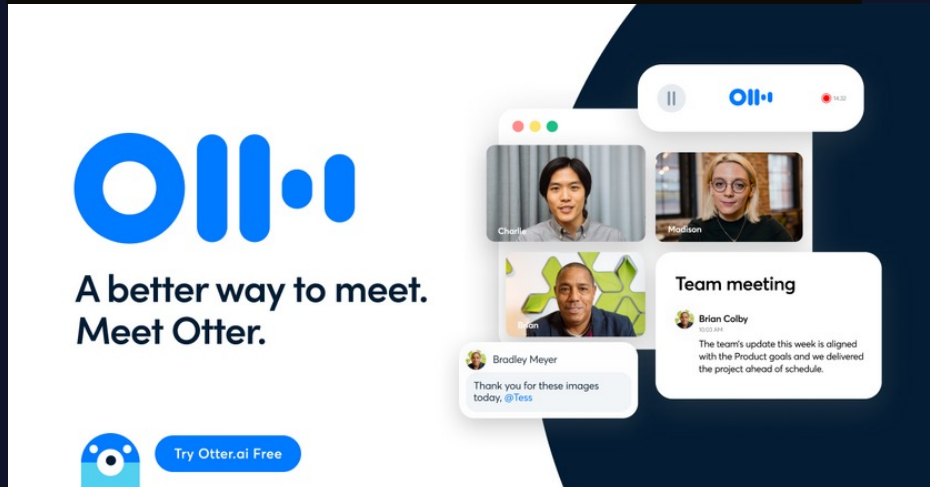
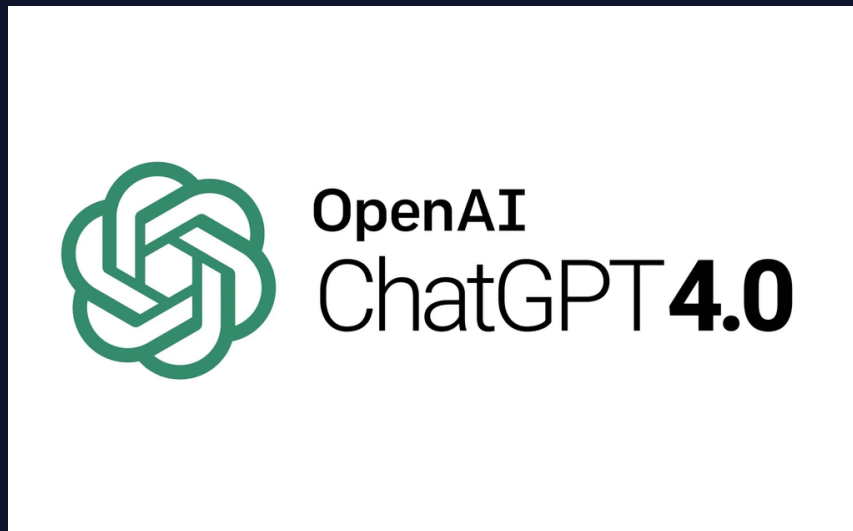
Data source: Kiela et al. (2023)

OurWorldInData.org/artificial-intelligence | CC BY

Note: For each capability, the first year always shows a baseline of -100, even if better performance was recorded later that year.

# II) Evolution + Revolution of DT

=> Generative AI =>?



## The Top 50 Gen AI Web Products, by Unique Monthly Visits

1.  ChatGPT	11.  ElevenLabs	21.  PhotoRoom	31.  PIXAI	41.  MaxAI.me
2.  Gemini*	12.  Hugging Face	22.  LODAYO	32.  ideogram	42.  Craiyon
3.  character.ai	13.  Leonardo.AI	23.  Clipchamp	33.  invideo AI	43.  OpusClip
4.  liner	14.  Midjourney	24.  runway	34.  Replicate	44.  BLACKBOX AI
5.  QuillBot	15.  SpicyChat	25.  YOU	35.  Playground	45.  CHATPDF
6.  Poe	16.  Gamma	26.  DeepAI	36.  Suno	46.  PIXELCUT
7.  perplexity	17.  Crushon AI	27.  Eightify	37.  Chub.ai	47.  Vectorizer.AI
8.  JanitorAI	18.  cutout.pro	28.  candy.ai	38.  Speechify	48.  DREAMGF
9.  CIVITAI	19.  PIXLR	29.  NightCafe	39.  phind	49.  Photomyne
10.  Claude	20.  VEED.IO	30.  VocalRemover	40.  NovelAI	50.  Otter.ai

\*formerly Bard

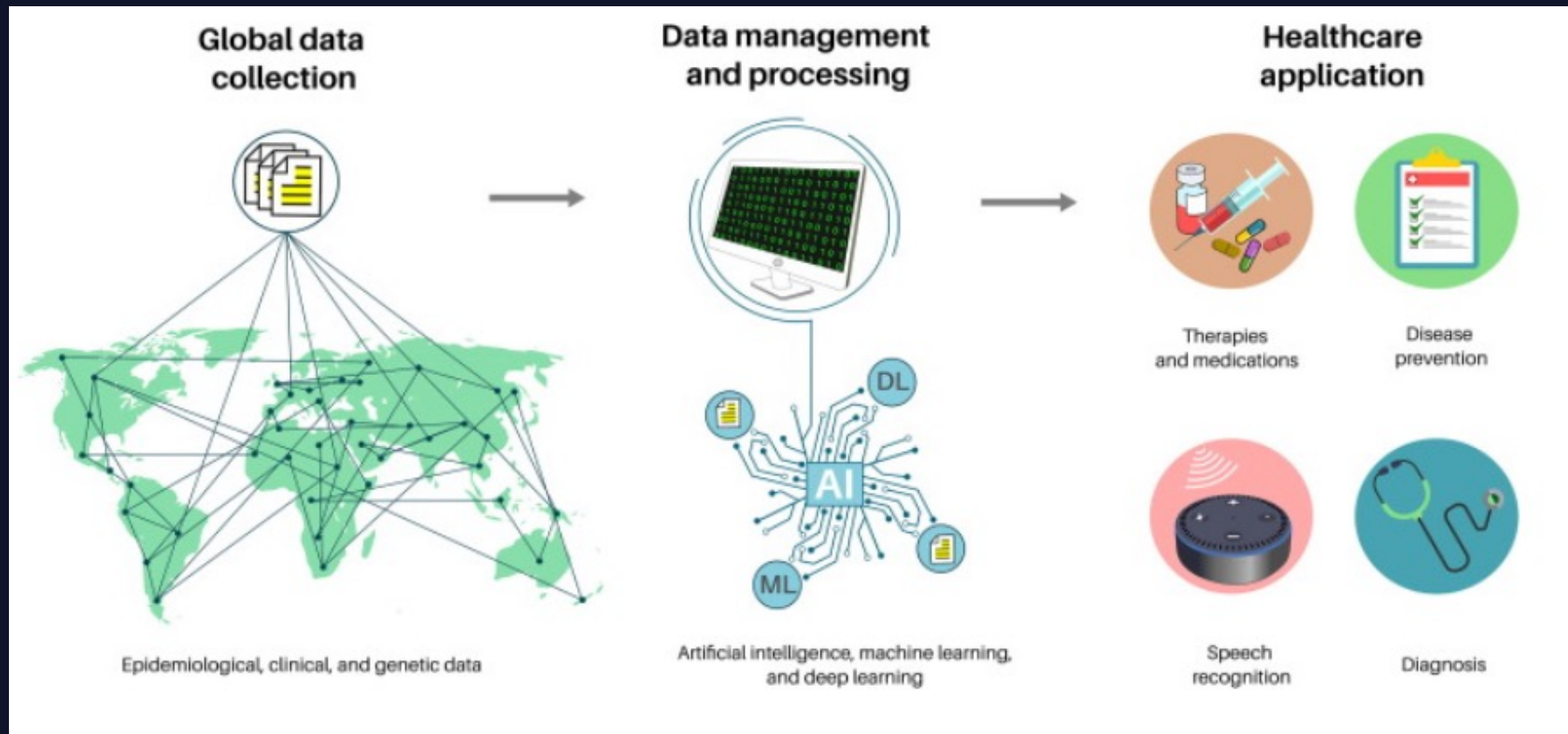
Charts are for informational purposes only and should not be used for investment decisions. Past performance is not indicative of future results. None of the above should be taken as investment advice; see [a16z.com/disclosures](https://a16z.com/disclosures).





# II) Evolution + Revolution of DT

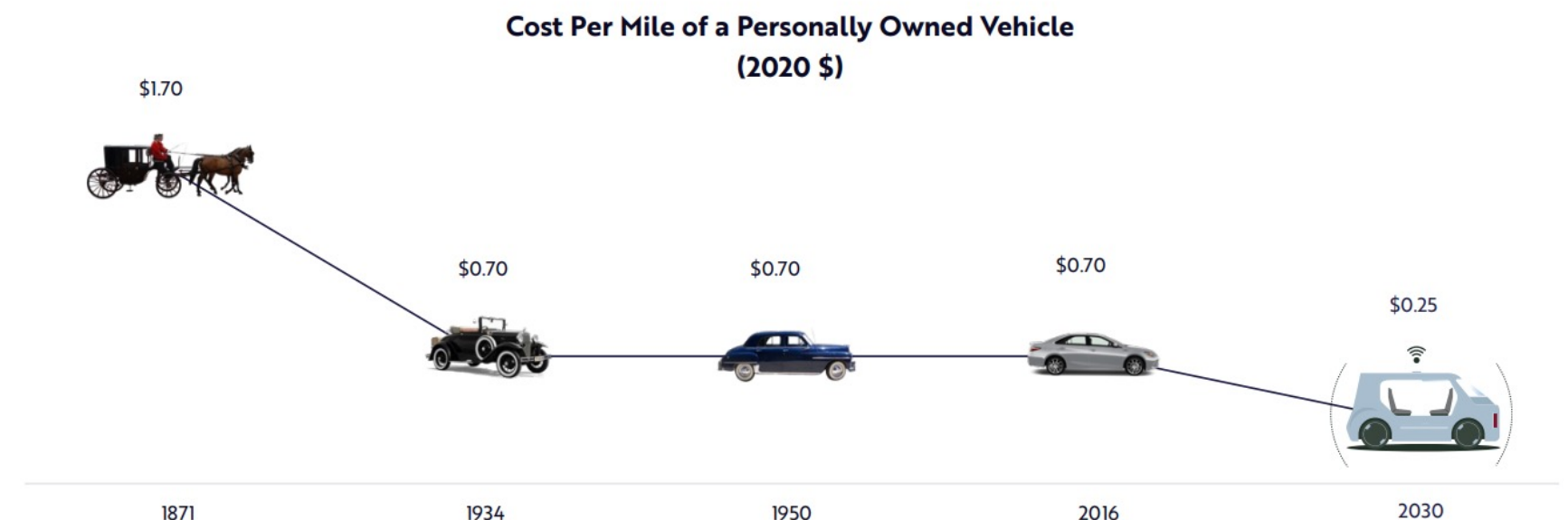
- DT & Others
  - Biotech + Infotech => Life Science Revolution
  - TransitoTech + Infotech => Smart Transit Systems



Source: Leite et. al. 2021

## Autonomous Ride-Hail Is Likely To Increase Access to Convenient Point-to-Point Transportation

Adjusted for inflation, the cost of owning and operating a personal car has not changed since the Model T rolled off the first assembly line nearly 100 years ago. ARK estimates that autonomous taxis at scale could cost consumers as little as \$0.25 per mile, spurring widespread adoption.



Sources: ARK Investment Management LLC, 2023. Forecasts are inherently limited and cannot be relied upon. For informational purposes only and should not be considered investment advice or a recommendation to buy, sell, or hold any particular security. Past performance is not indicative of future results.

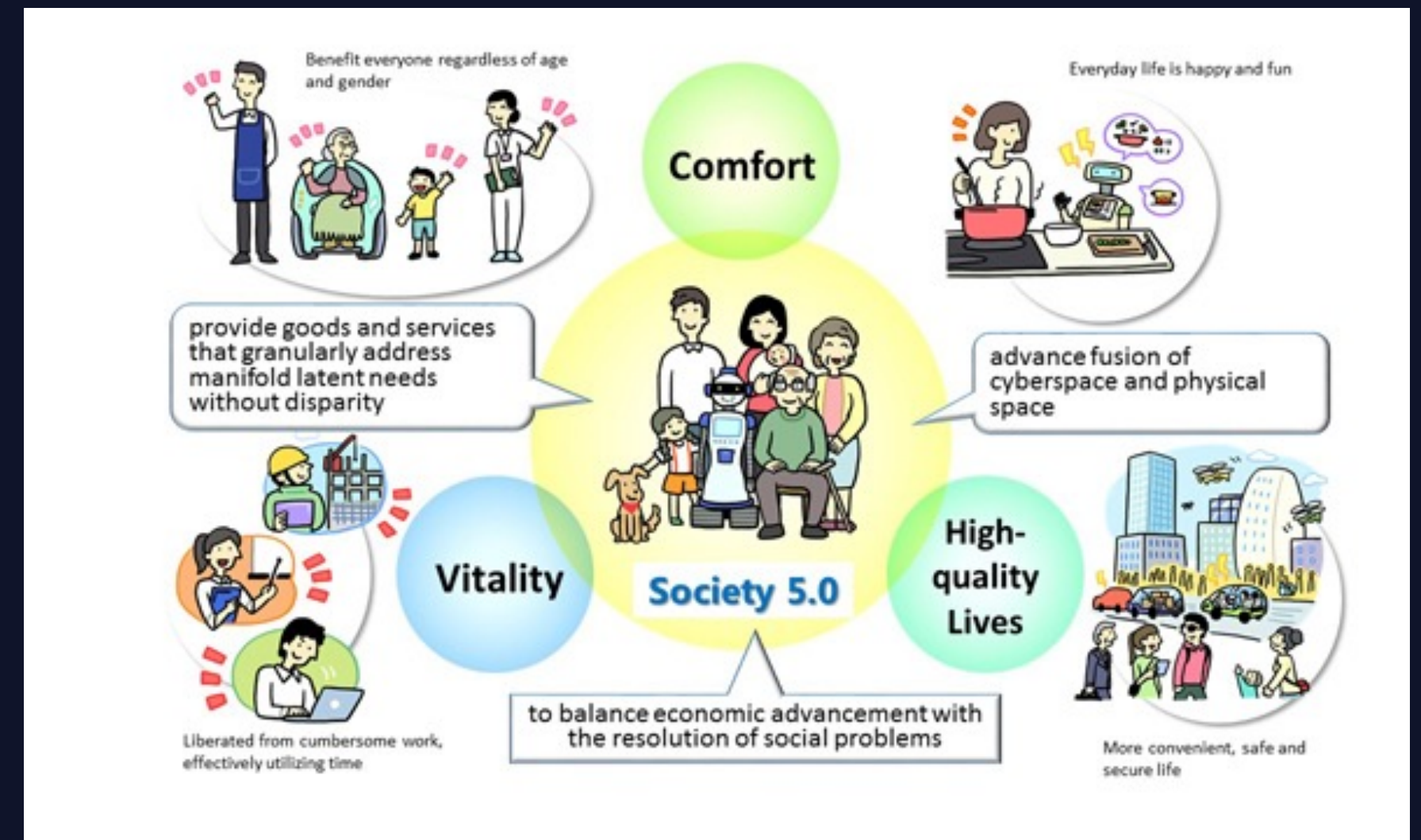
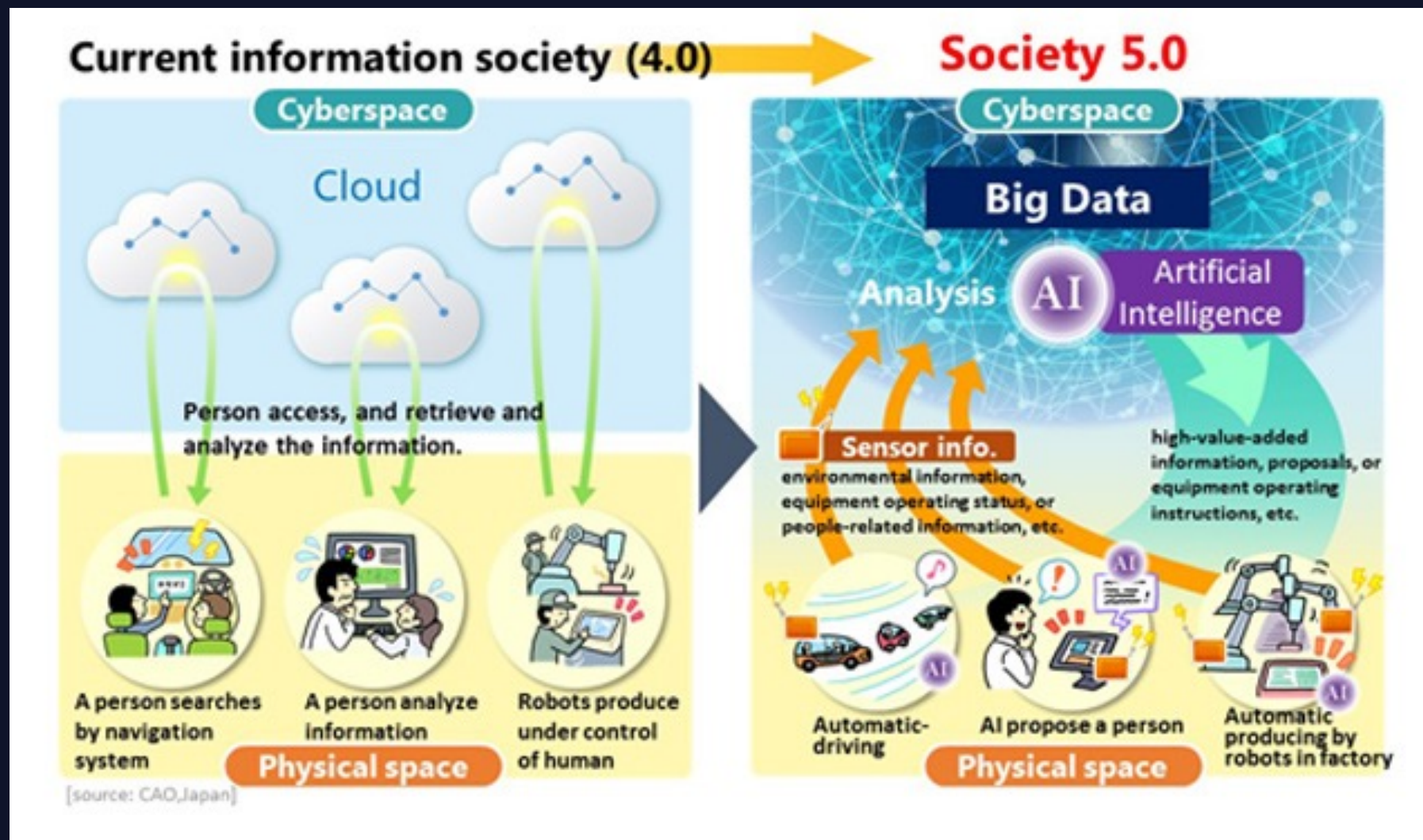
source: ARK, 2023



# II) Evolution + Revolution of DT

(cont.)

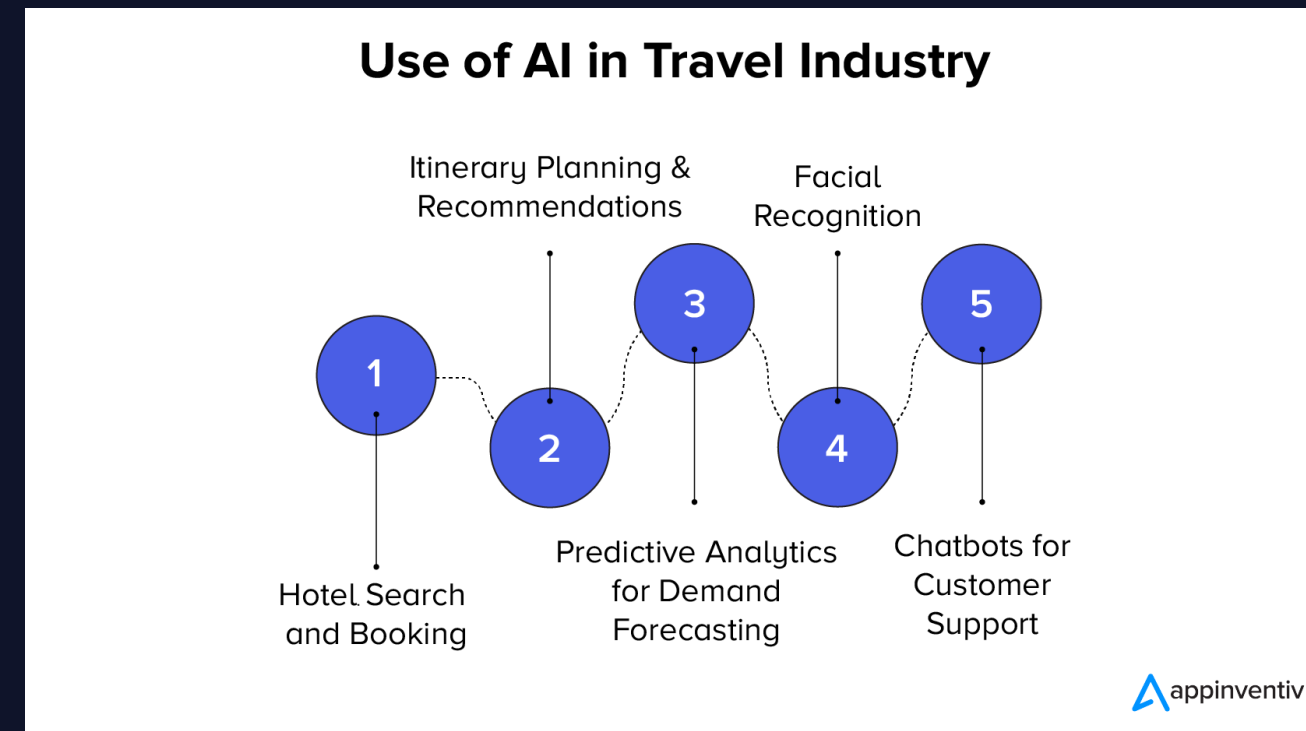
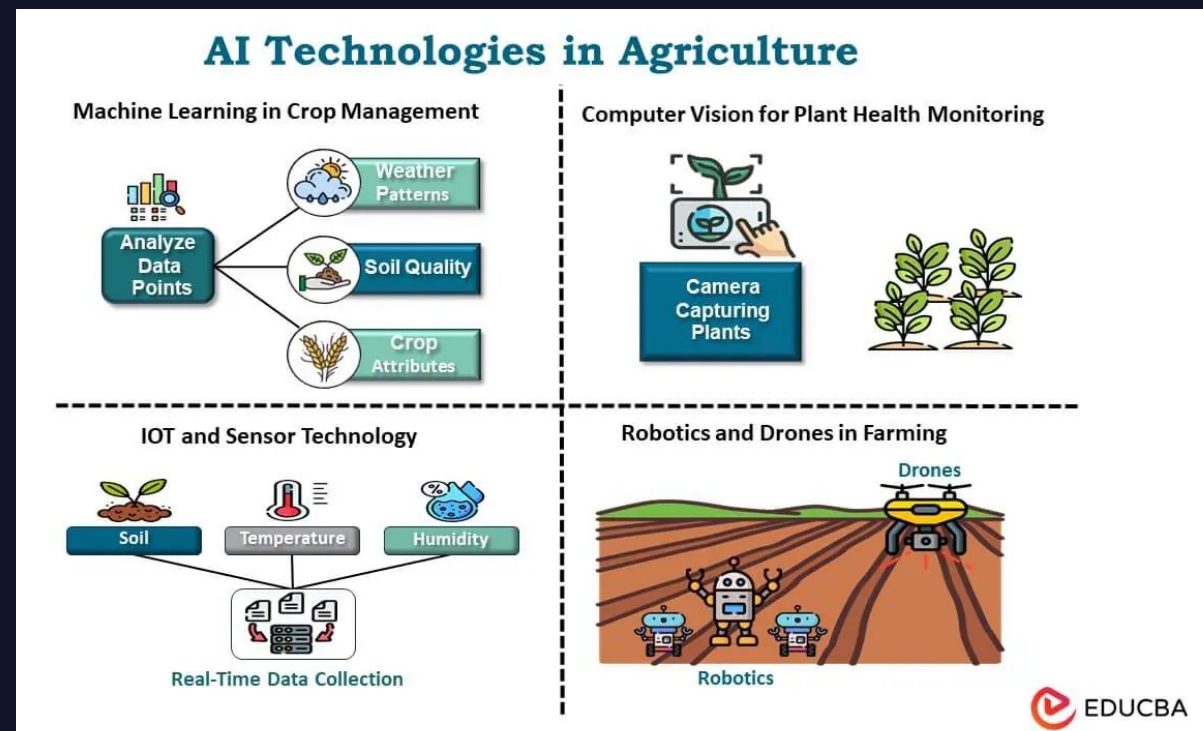
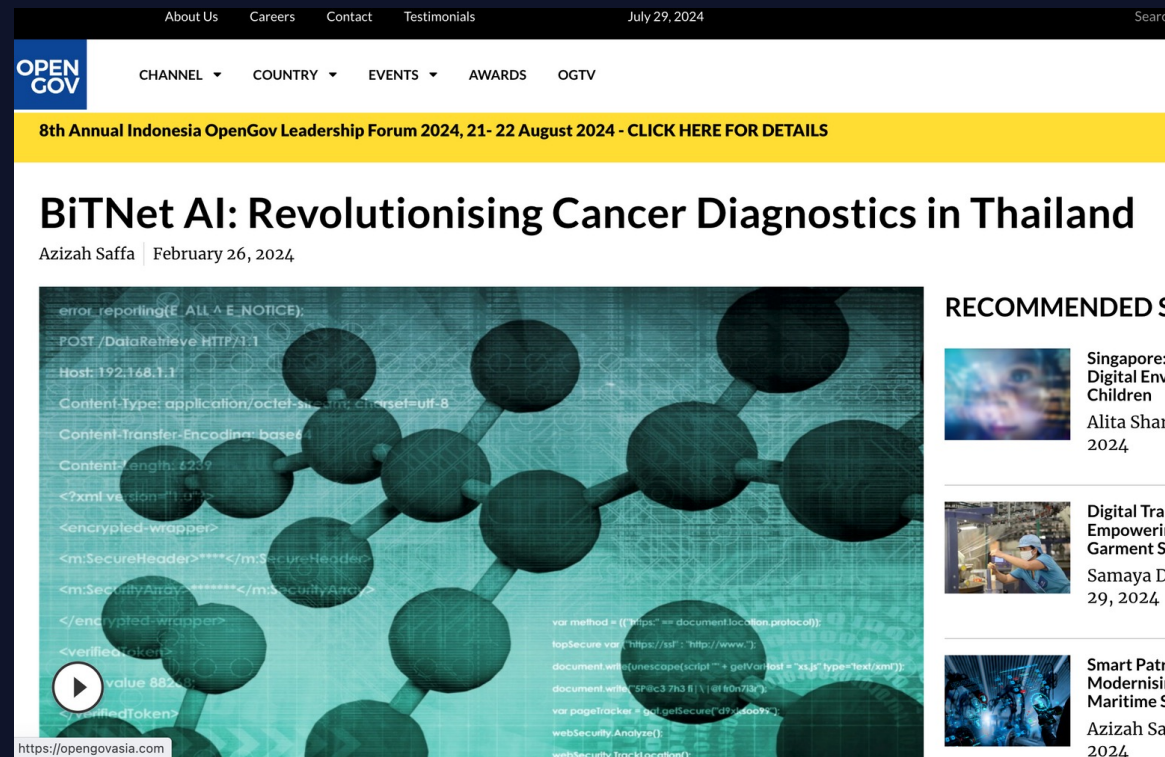
- Bridging Physical and Virtual world for better society such as Japan Society 5.0





# III) Digitalization by Design

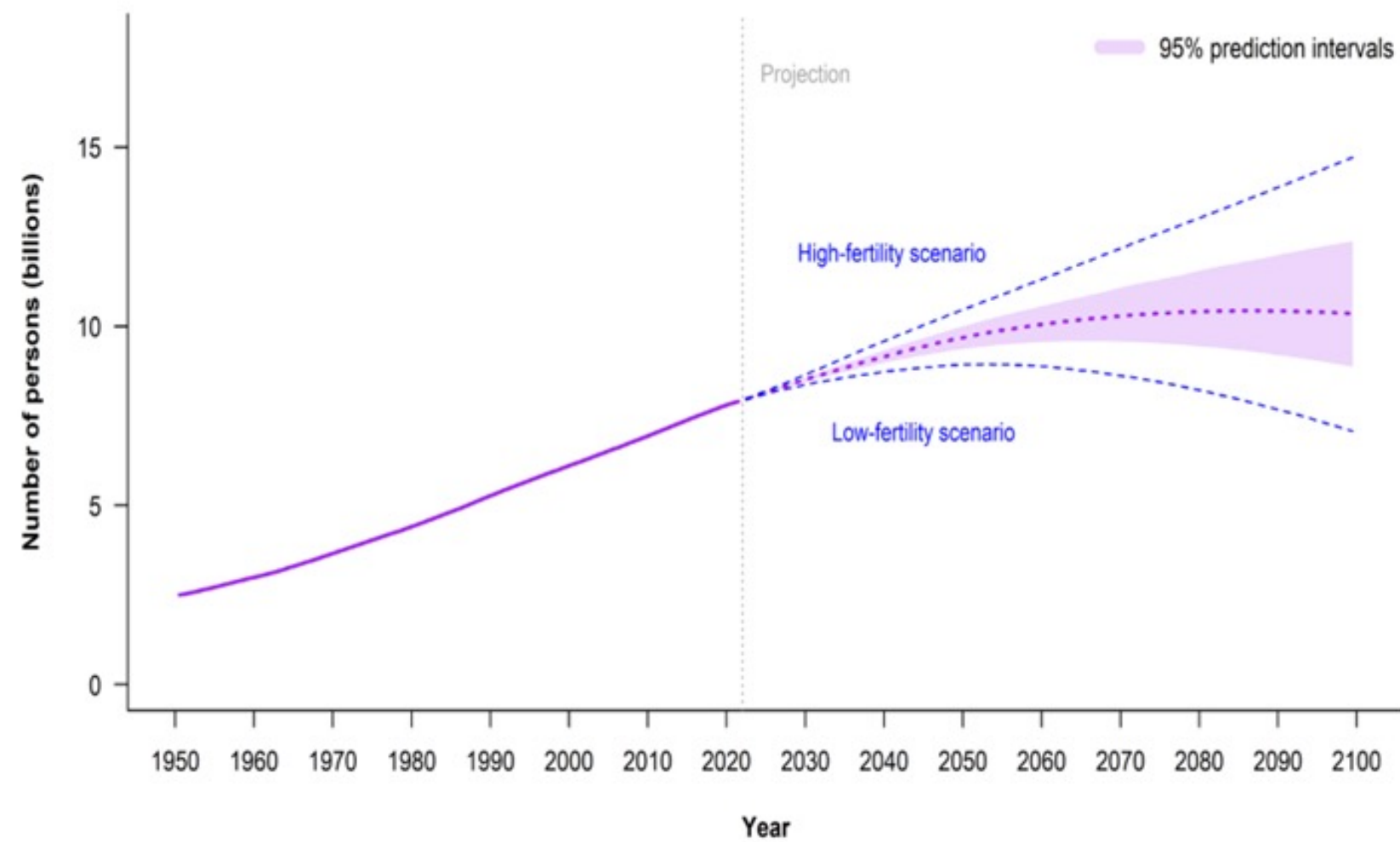
- Using DT with (good) targets
- Like Design Thinking
- Using DT with OKRs- Objective Key Results



# IV) Global Challenges and Socio-Economic Impact

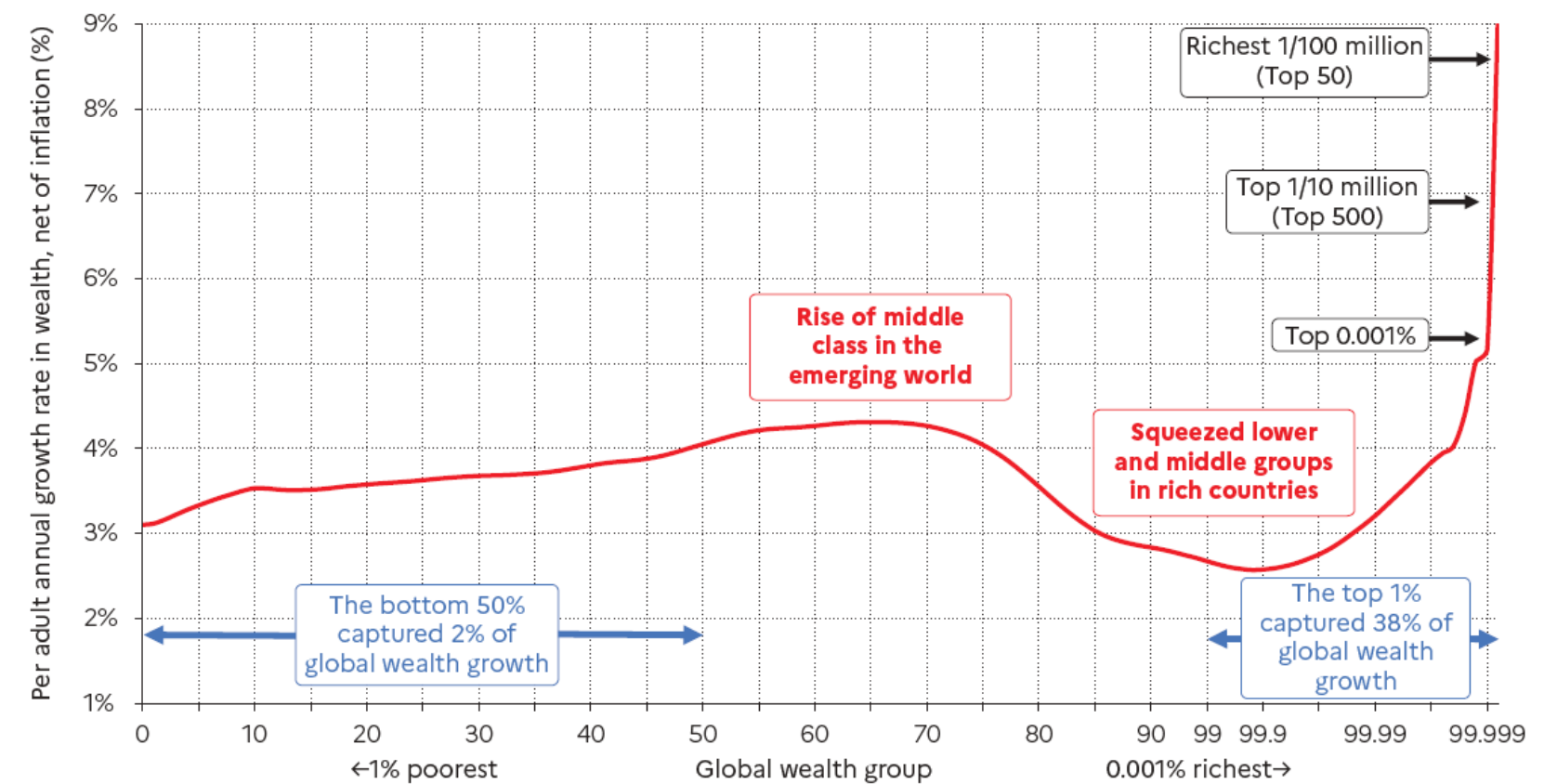
- 8 Billion people, urban density, inequality and poverty

Global population size: estimates, 1950-2022, and medium scenario with 95 per cent prediction intervals and high- and low-fertility scenarios, 2022-2100



source: UN, 2022

Figure 9 Average annual wealth growth rate, 1995-2021



**Interpretation:** Growth rates among the poorest half of the population were between 3% and 4% per year, between 1995 and 2021. Since this group started from very low wealth levels, its absolute levels of growth remained very low. The poorest half of the world population only captured 2.3% of overall wealth growth since 1995. The top 1% benefited from high growth rates (3% to 9% per year). This group captured 38% of total wealth growth between 1995 and 2021. Net household wealth is equal to the sum of financial assets (e.g. equity or bonds) and non-financial assets (e.g. housing or land) owned by individuals, net of their debts. **Sources and series:** wir2022.wid.world/methodology, Bauluz et al. (2021) and updates

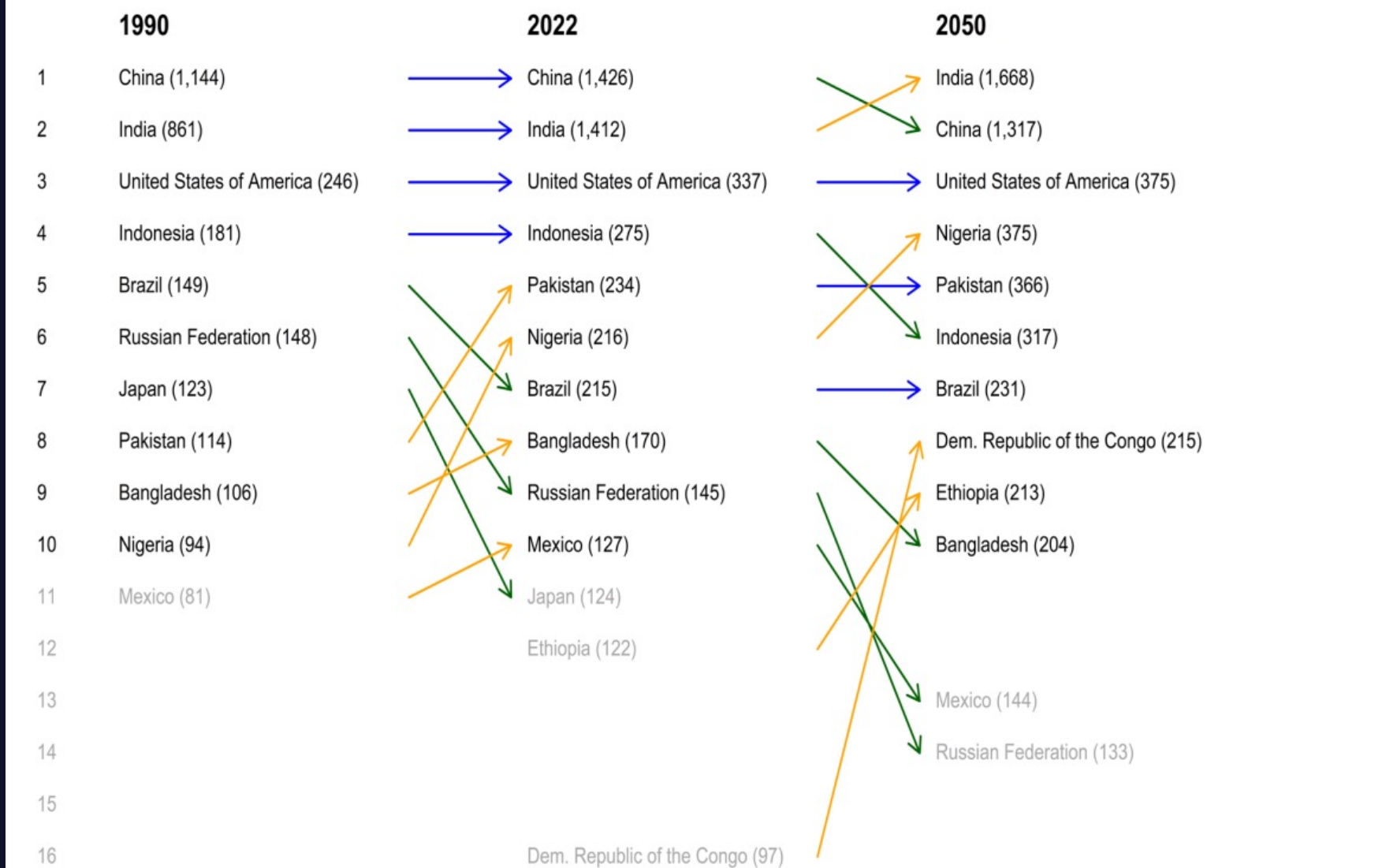
source : World Inequality Database, 2022



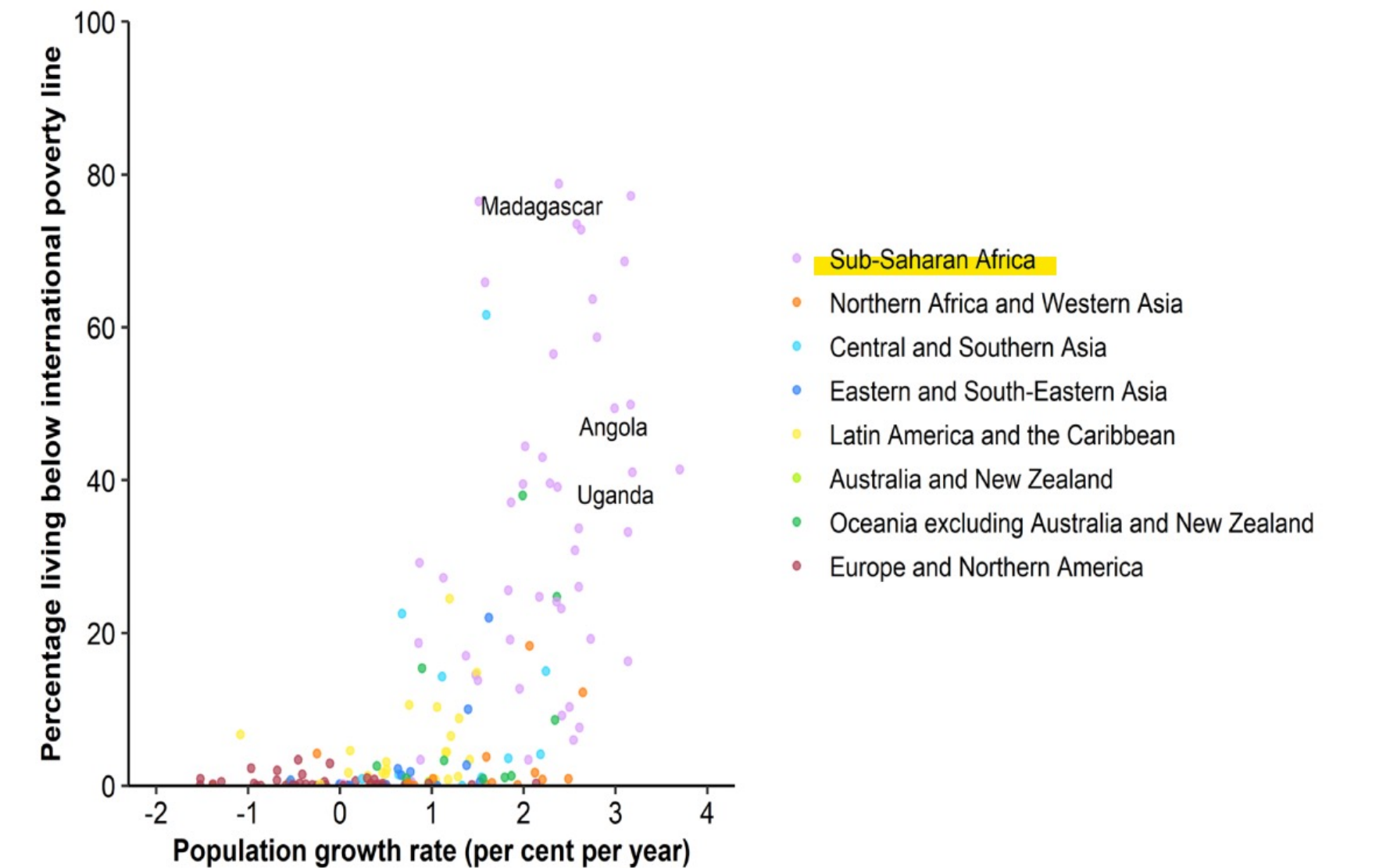
# IV) Global Challenges and Socio-Economic Impact

- 8 Billion people, urban density, inequality and poverty (cont.)

Rankings of the world's ten most populous countries, 1990 and 2022, and medium scenario, 2050 (numbers in parentheses refer to total population in millions)



Population growth rate, 2015-2020, by the proportion of the population living below the international poverty line, 2003-2021



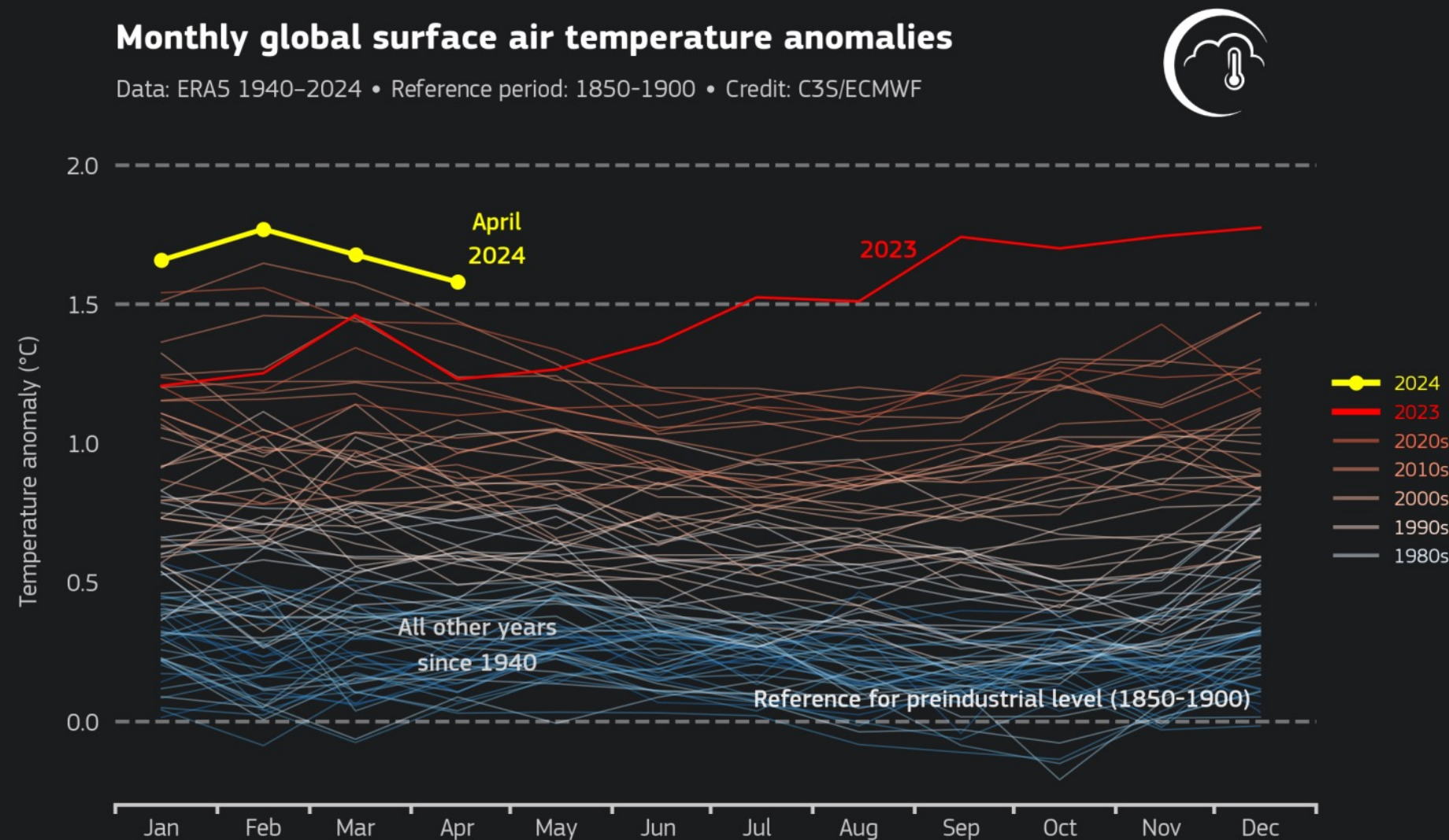


# IV) Global Challenges and Socio-Economic Impact

- Global warming affecting Sustainability

## Monthly global surface air temperature anomalies

Data: ERA5 1940–2024 • Reference period: 1850–1900 • Credit: C3S/ECMWF



PROGRAMME OF THE EUROPEAN UNION



IMPLEMENTED BY ECMWF



## Adverse impacts from human-caused climate change will continue to intensify

a) Observed widespread and substantial impacts and related losses and damages attributed to climate change

### Water availability and food production



Physical water availability



Agriculture/crop production



Animal and livestock health and productivity



Fisheries yields and aquaculture production

### Health and well-being



Infectious diseases



Heat, malnutrition and harm from wildfire



Mental health



Displacement

### Cities, settlements and infrastructure



Inland flooding and associated damages



Flood/storm induced damages in coastal areas



Damages to infrastructure



Damages to key economic sectors

### Biodiversity and ecosystems



Terrestrial ecosystems



Freshwater ecosystems



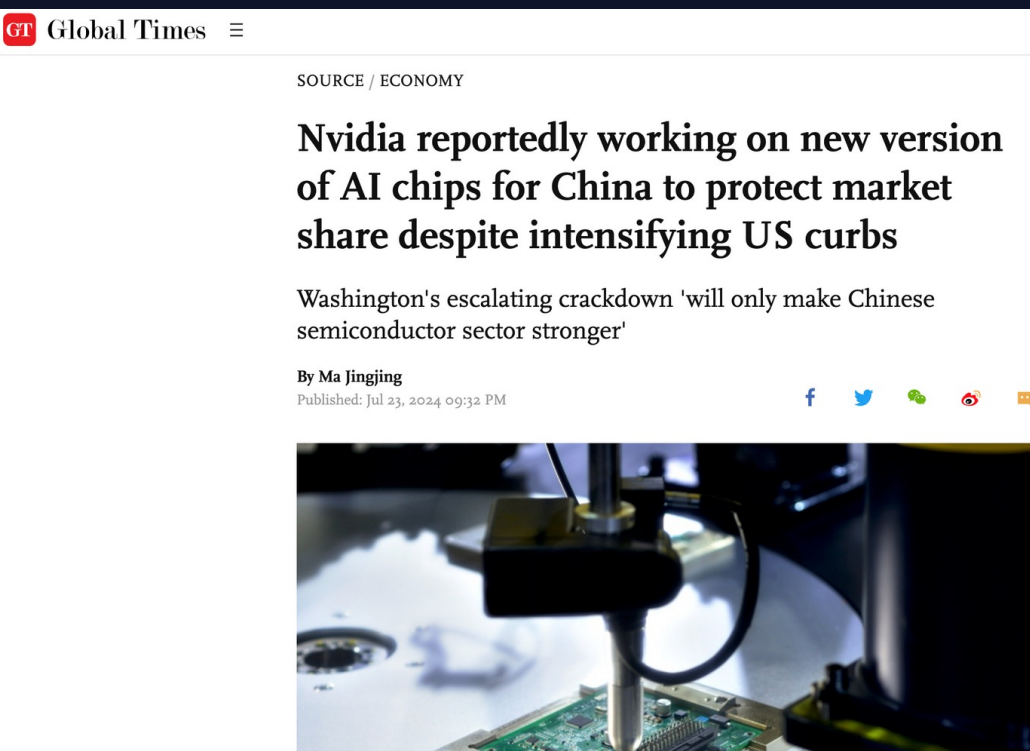
Ocean ecosystems

Includes changes in ecosystem structure, species ranges and seasonal timing

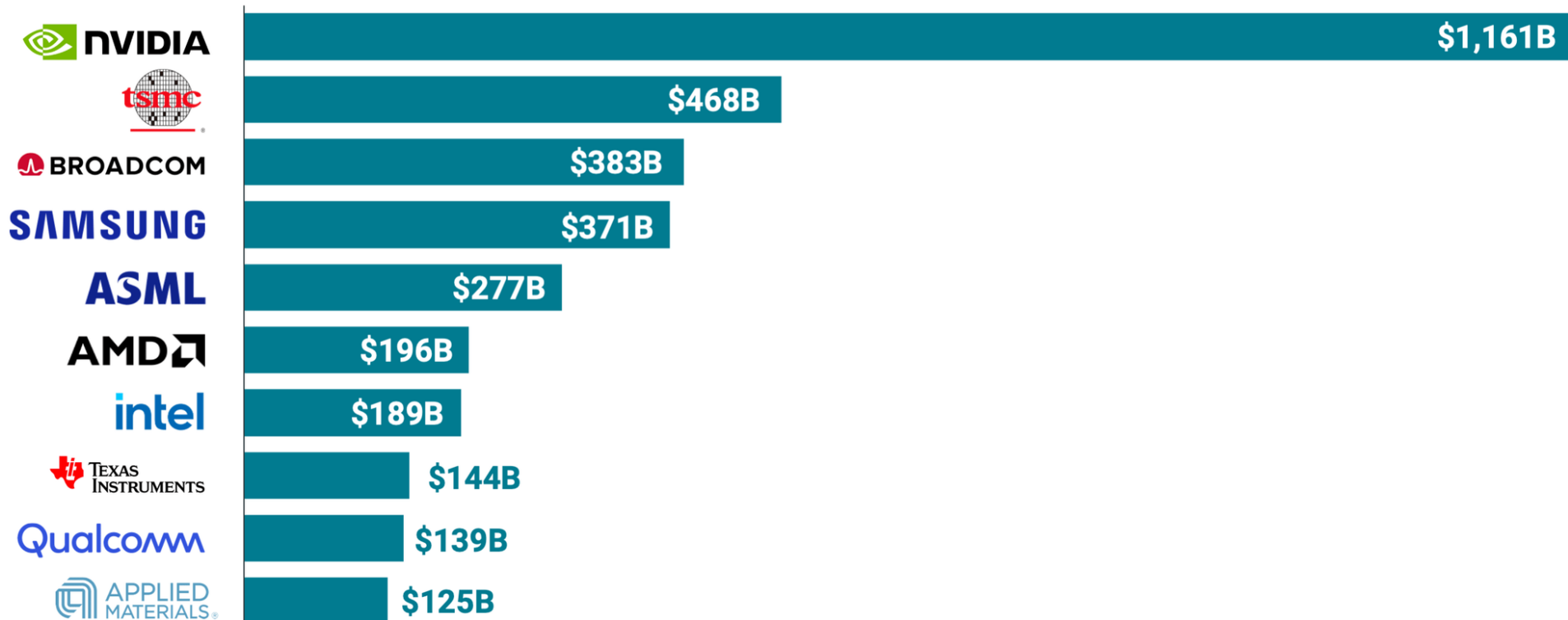


# IV) Global Challenges and Socio-Economic Impact

- Global conflicts affecting supply chains, hence cost of production



## The largest public semiconductor companies by market cap

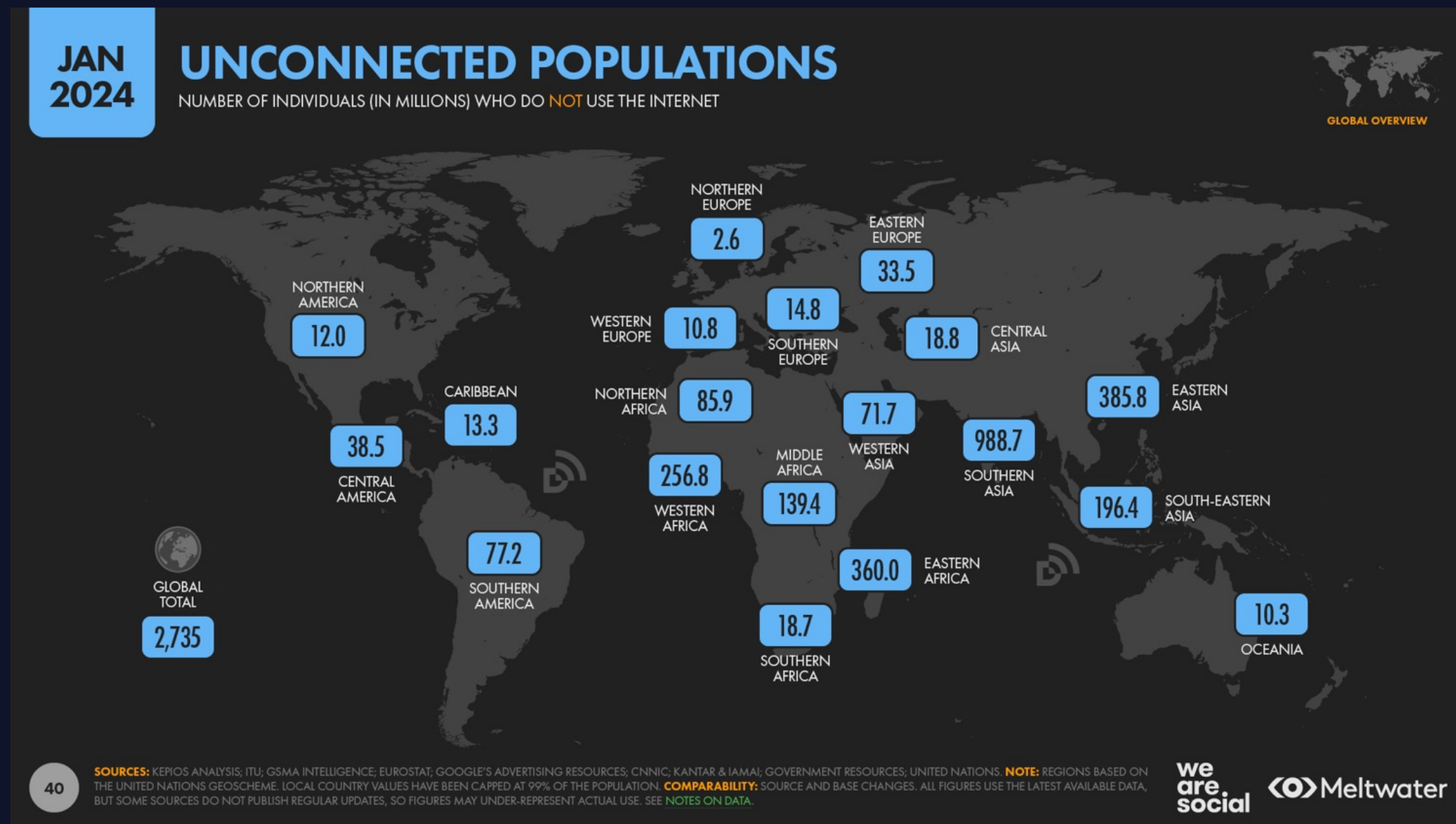


State of Semiconductors Q3'23  
Source: CB Insights; market cap as of 11/30/2023



# IV) Global Challenges and Socio-Economic Impact

- Digital divide and the needs for inclusive development



source: UNDP

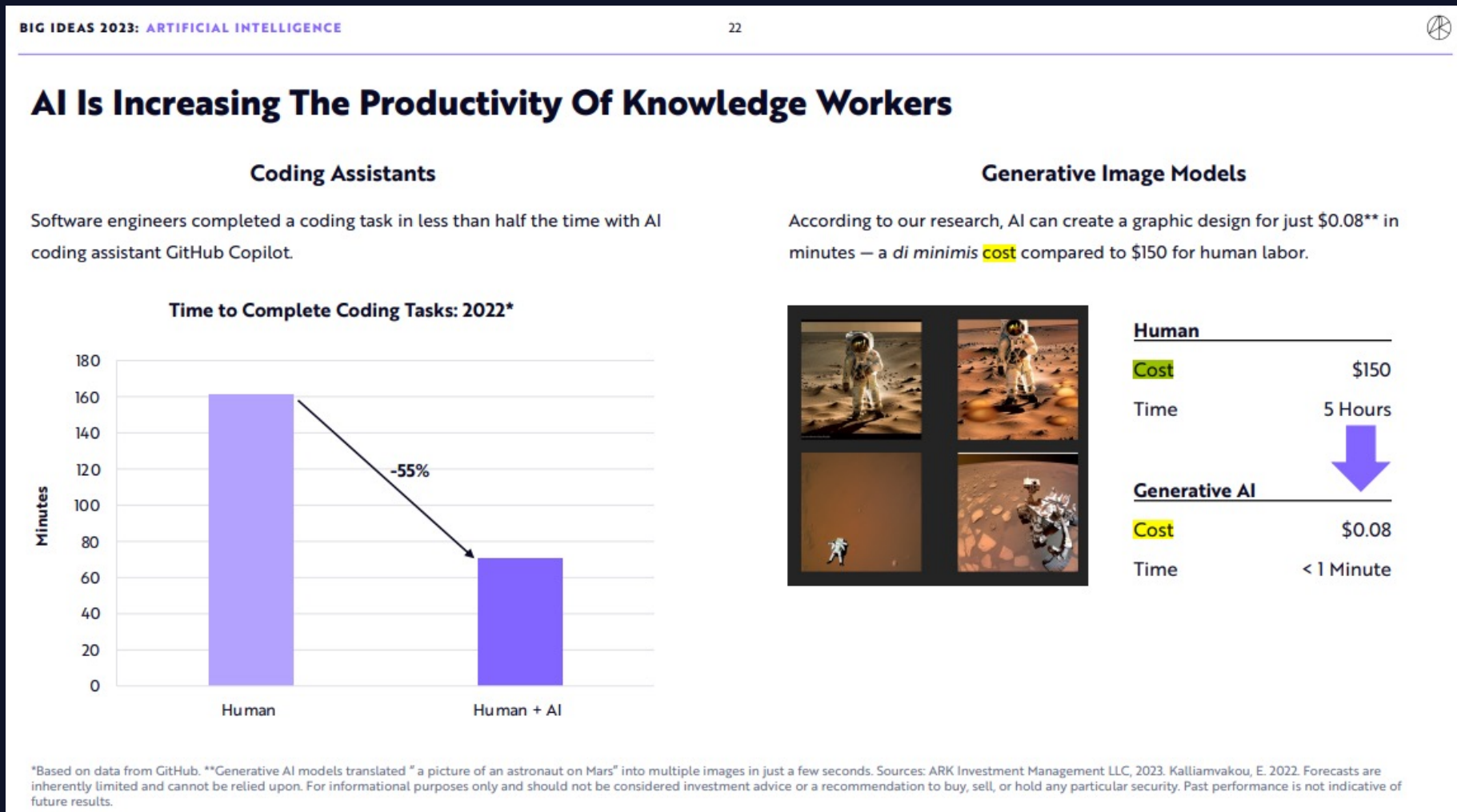
Digital Transformation framework



# V) DT Missions and Actions for GMS

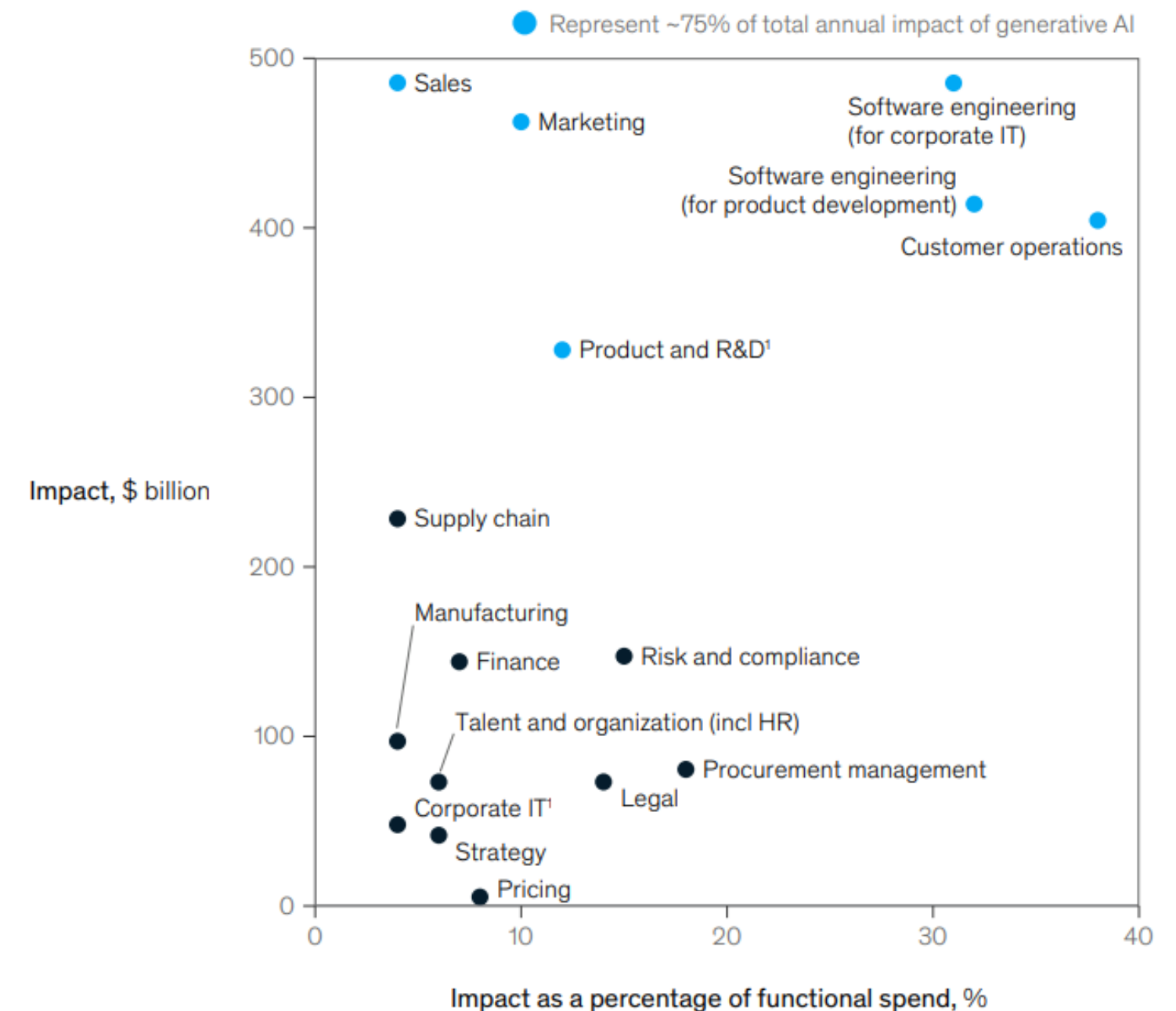
=> DT Missions

- Cost saving
- Efficiency enhancing



source: ARK, 2023

Using generative AI in just a few functions could drive most of the technology's impact across potential corporate use cases.



source: McKinsey, 2023

# V) DT Missions and Actions for GMS

=> DT Missions

- Opportunity creating

Exhibit 6: Economic benefits arising from digital businesses



Source: WPC, September 2023

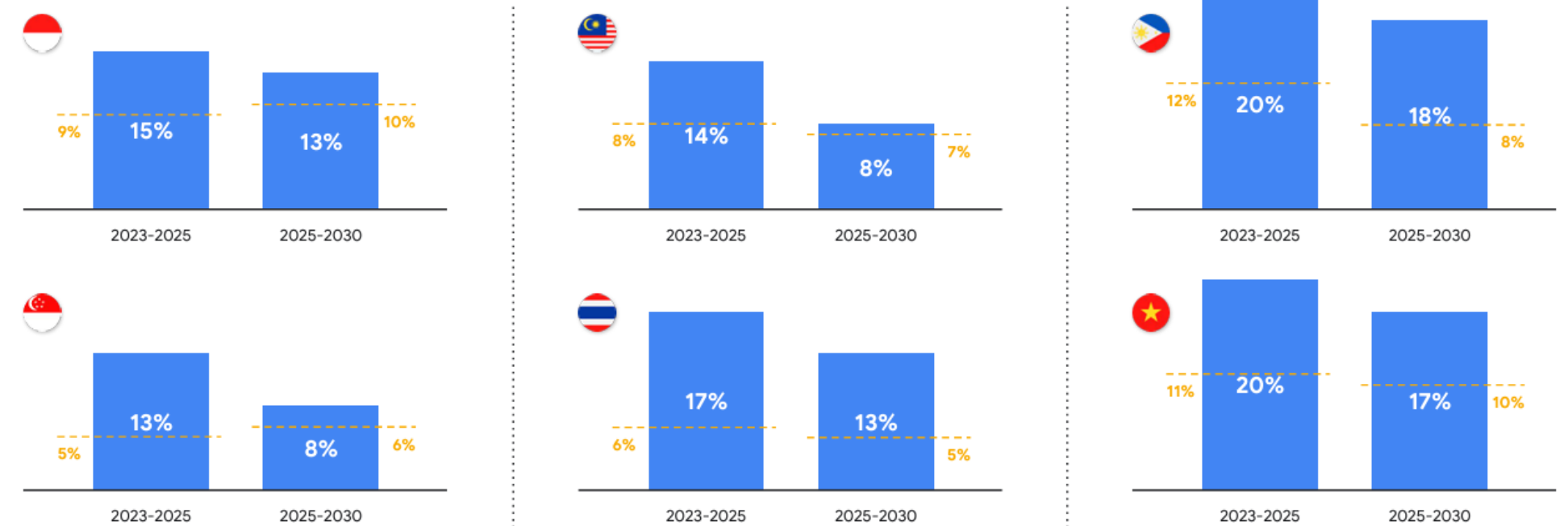
asean.2024

## The digital economy will continue to be a major growth driver in SEA

Digital economy GMV vs GDP growth

Expected digital economy CAGR

Expected nominal GDP CAGR



Source: Bain analysis

Google TEMASEK BAIN & COMPANY




# V) DT Missions and Actions for GMS

=> DT Missions

- Cybercrime preventing

euronews.next BIZTECH NEWS MONEY WORK MOBILITY HEALTH HOME OPINION SER

## Audio deepfake scams: Criminals are using AI to sound like family and people are falling for it



They sound distressed and they're begging you for money immediately.

By [Sophia Khatsenkova](#) • Updated: 23/05/2023

**Artificial intelligence (AI) is being used to recreate the sound of family members' voices in order to scam people out of thousands of euros.**

Imagine you receive a phone call from a family member. They sound distressed and beg you to send them money.

In the end, you find out you've been scammed. The call you received was never them but a fake voice created using artificial intelligence (AI).

Bloomberg the Company & Its Products | Bloomberg Terminal Demo Request | Bloomberg Anywhere Remote Login | Bloomberg Customer Support

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### Technology

## Google Launching Tools to Identify Misleading and AI Images

- Image search results will include additional information
- AI-generated content will be labeled as such by platforms

By [Vlad Savov](#)  
May 15, 2023, 5:43 AM UTC

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Google is adding two new features to its image search to reduce the spread of misinformation, especially now that artificial intelligence tools have made the creation of photorealistic fakes trivial.

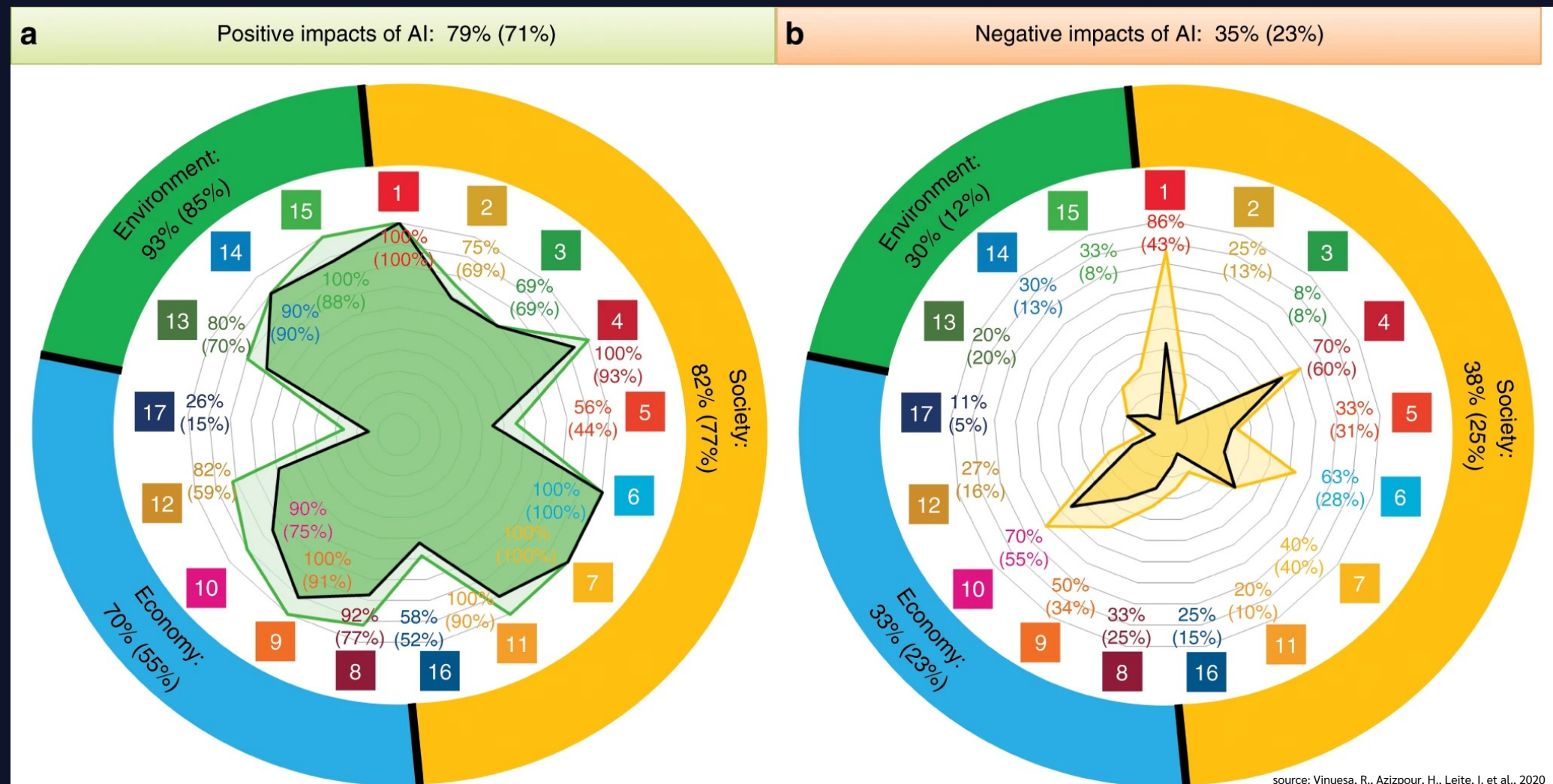
The [Alphabet Inc.](#) company's first new feature is called 'About this image,' serving up additional context like when an image or similar ones were first indexed by Google, where they first appeared and where else they've shown up online. The intent is to help users pinpoint the original source while also contextualizing an image with any debunking evidence that might have been provided by news organizations.



# V) DT Missions and Actions for GMS

=> DT Missions

- Generative AI promoting/regulating



Potential Impacts of AI to different dimensions, and goals

**Bangkok Post**

NEWS THAILAND BUSINESS LIFE GURU LEARN

BUSINESS > GENERAL

## Policymakers set to prepare more AI rules

Countries likely to look to EU's AI Act

PUBLISHED : 25 APR 2024 AT 06:26  
 NEWSPAPER SECTION: BUSINESS WRITER: SUCHIT LEESA-NGUANSUK

The screenshot shows a news article from the Bangkok Post. The article is titled "Policymakers set to prepare more AI rules" and is categorized under "BUSINESS > GENERAL". The sub-headline reads "Countries likely to look to EU's AI Act". The article was published on April 25, 2024, at 06:26, and was written by Suchit Leesa-Nguansuk. The image at the bottom of the article features a futuristic robot head with glowing blue eyes and a stylized brain with the letters "AI" in the center, set against a dark blue background with circuit-like patterns.



# VI) DT Missions and Actions

- By: De-mocratization

*“The JioPhone Next is an affordable smartphone designed for India, inspired by the belief that everyone in India should benefit from the opportunities the internet creates,”*



Sundar Pichai, CEO, Google and Alphabet, 2021



img: Tony Avelar/AP Images

IMG: jio.com/next

## JioPhone Next

CREATED WITH Google

Get it now at only ₹4499

INR 4499 = ~1,909 THB

IMG: ETTelecom

## JioBharat

4G digital life

₹999 Only

Plan Comparison	JioBharat	Other Operator	Jio Advantage
Unlimited Voice Plan (28 Days)	₹123 14 GB	₹179 2 GB	<b>30% Saving</b> 7 times more data

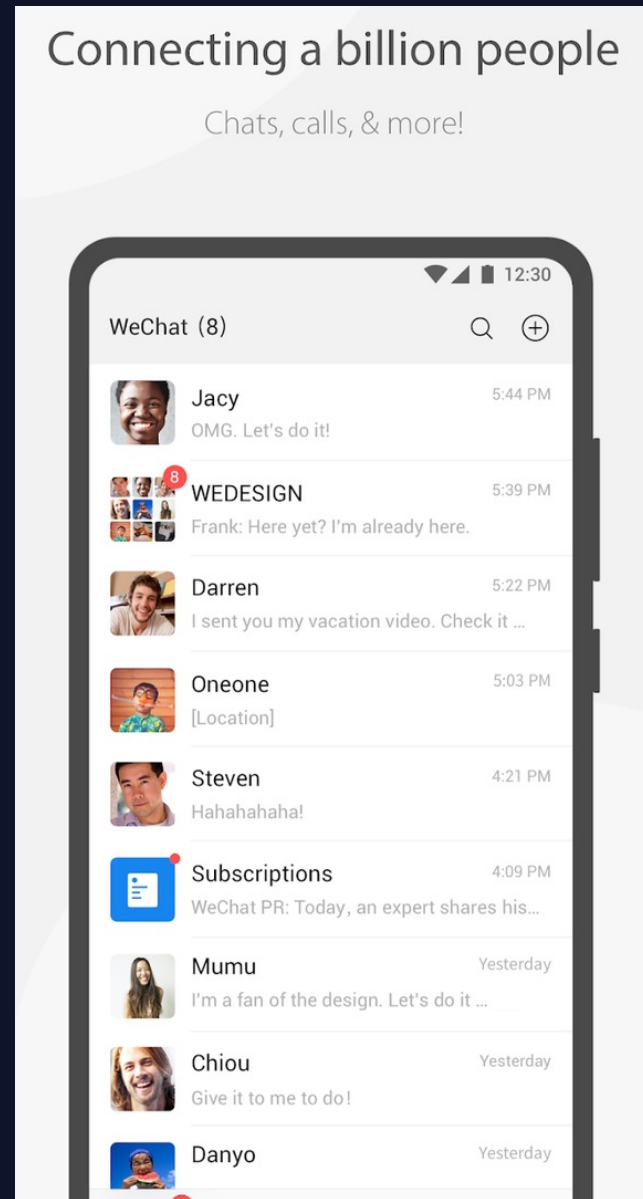
Annual plan of ₹1234 with 0.5 GB/Day and unlimited voice calls

T&C Apply

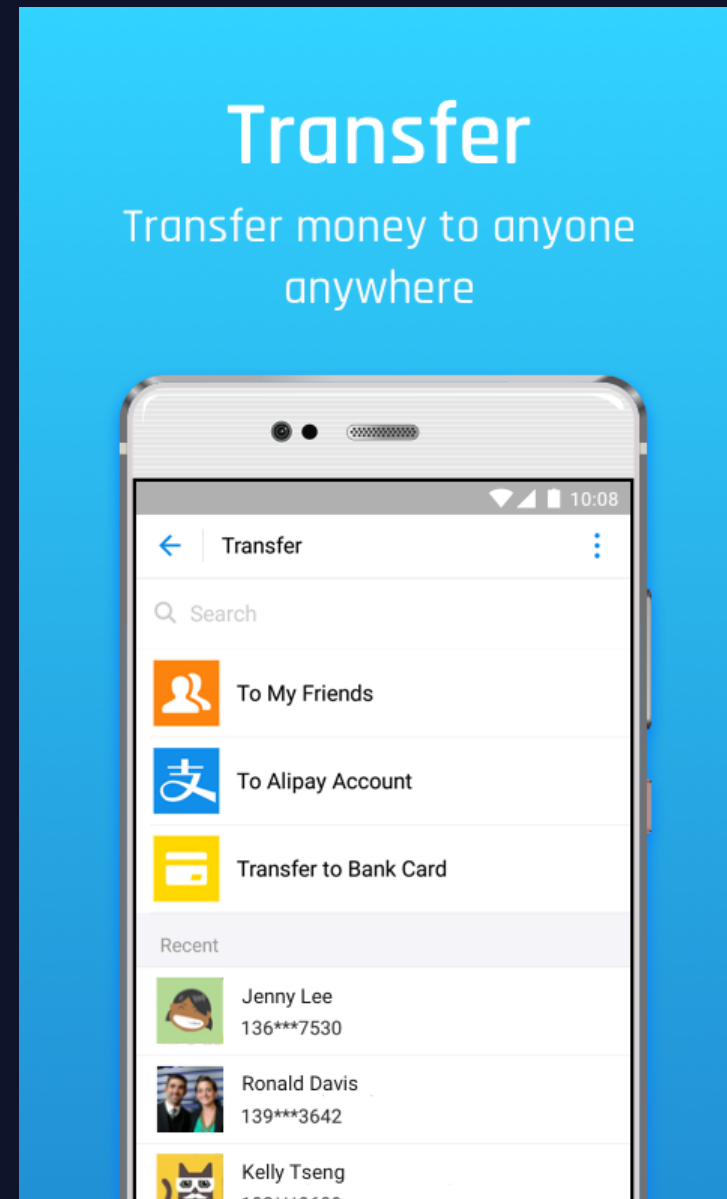
\* INR 999 = ~426 THB

# VI) DT Missions and Actions

- By: De-mocratization



Wechat  
(IM+ Services)



Alipay  
(IM+ Services)



Meituan  
(Food + Services)



Ping An Health  
(Telemed)



# V) DT Missions and Actions for GMS

=> DT Missions

- Generative AI promoting/regulating (cont.)

Privacy & Data Security Law source :Bloomberglaw, 2023






Photo Illustration: Jonathan Hurtarte/Bloomberg Law; Photos: Getty Images

April 27, 2023, 3:55 PM

## Facial Recognition Software Is Everywhere, With Few Legal Limits

**DEEP DIVE**

 **Skye Witley**  
Reporter

 **Andrea Vittorio**  
Reporter

- New York City is anomaly in proposed limits
- Despite growing use, regulations rare elsewhere

A proposal to ban New York City businesses from using facial recognition

**Related Stories**

[NYC Lawmakers Seek Ban On Facial Scans To Identify Customers \(2\)](#)  
April 13, 2023, 3:22 AM

REUTERS® World Business Markets Sustainability Legal Breakingviews Technology Investigations

Disrupted

## U.S., China, other nations urge 'responsible' use of military AI

By Toby Sterling

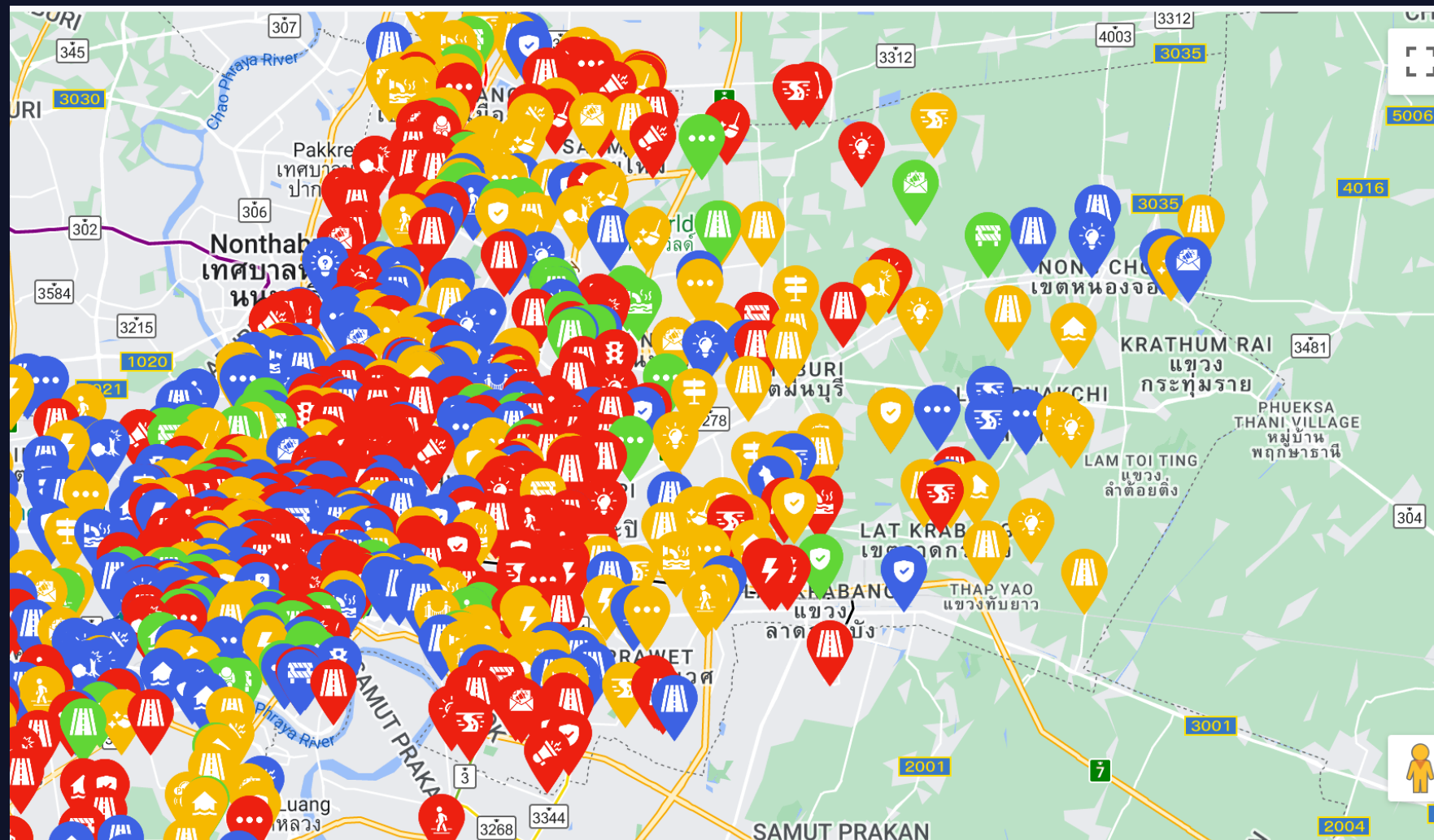
February 17, 2023 5:27 AM GMT+7 · Updated 4 months ago





# V) DT Missions and Actions for GMS

- By: De-bureaucratization



BKK Traffy Fondue (Problem report & City management)

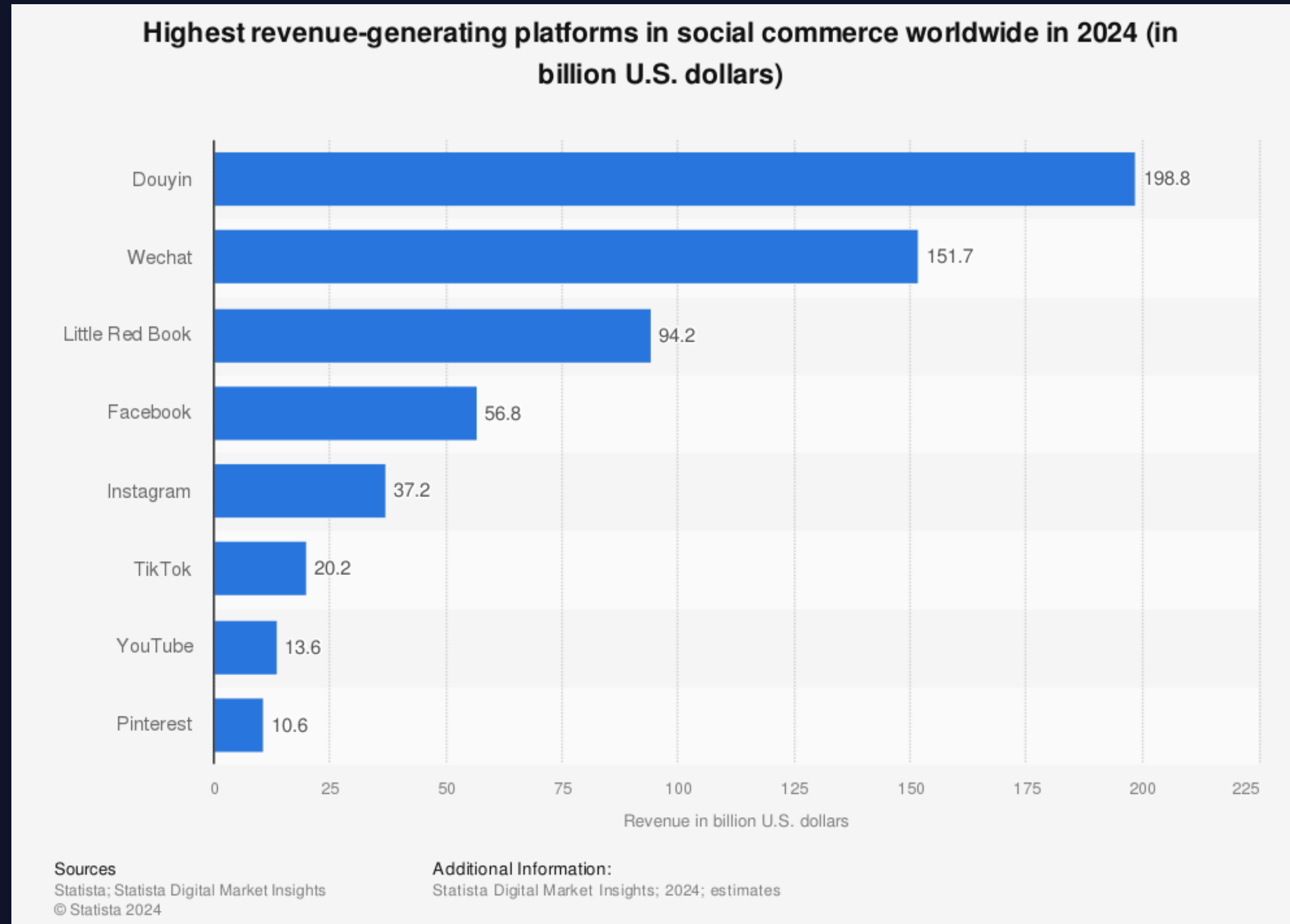


Open Government Thailand (Public dataset for R&D)



# V) DT Missions and Actions for GMS

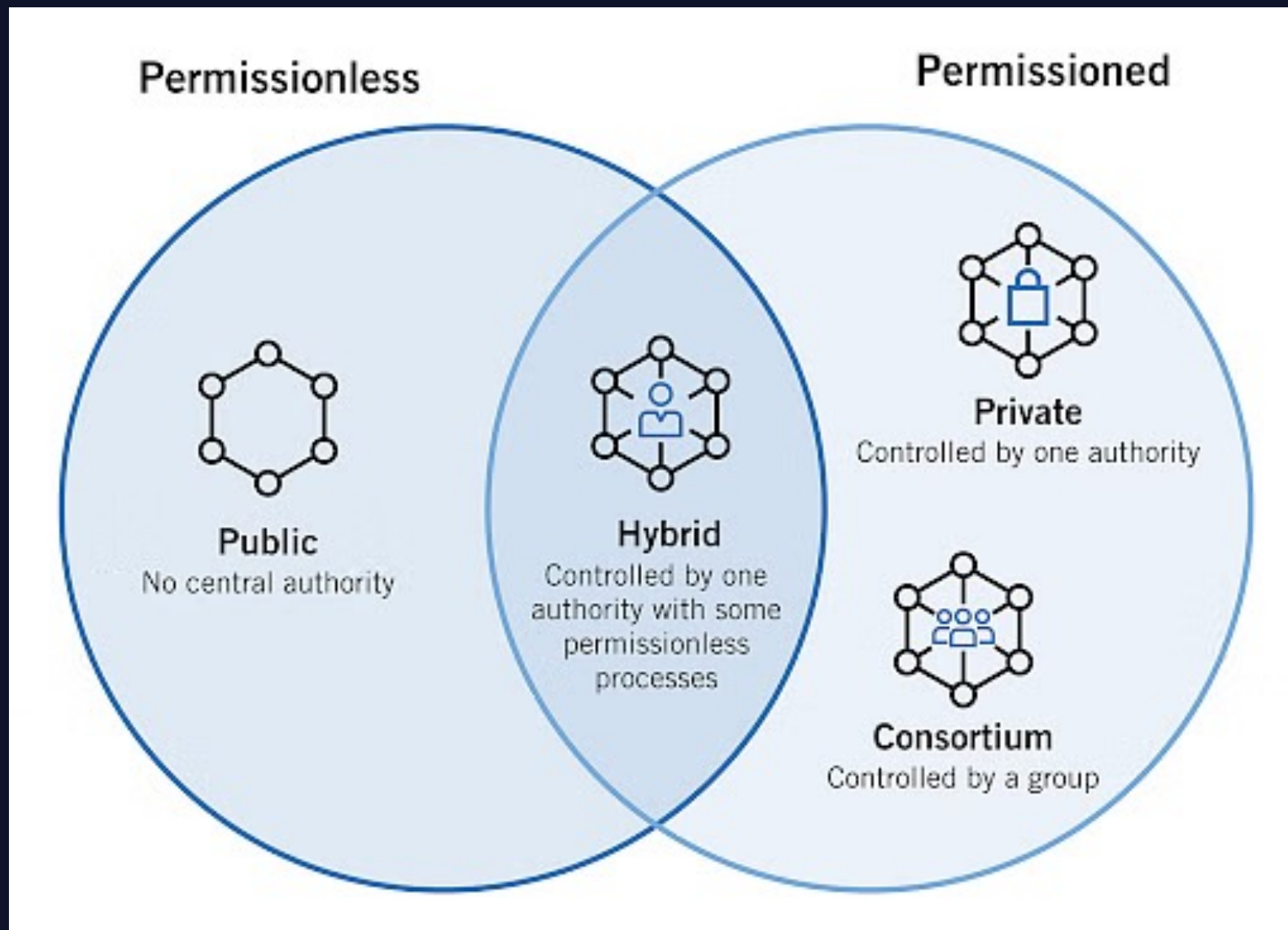
- By: De-intermediation



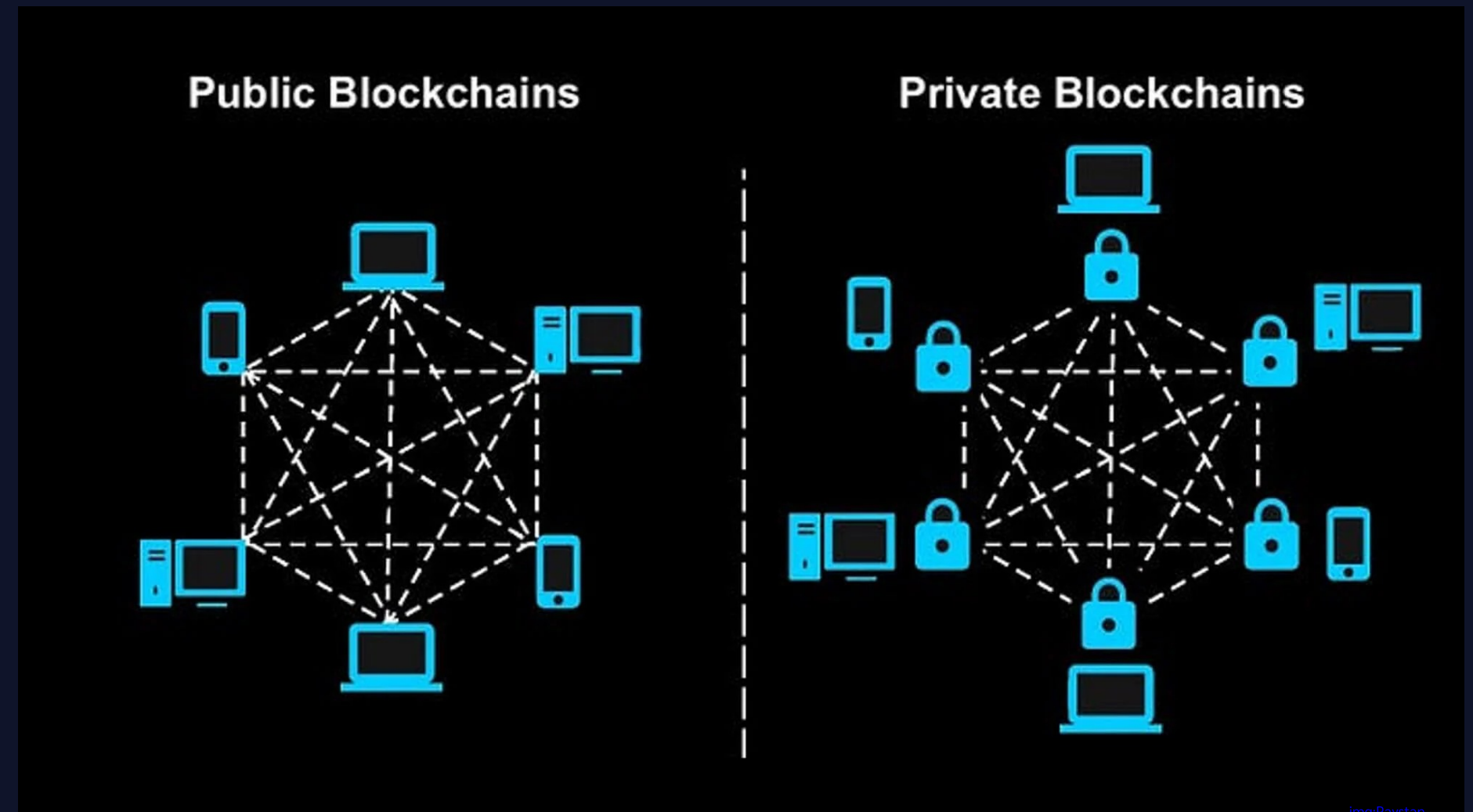
Social commerce platforms

# V) DT Missions and Actions for GMS

- By: De-intermediation



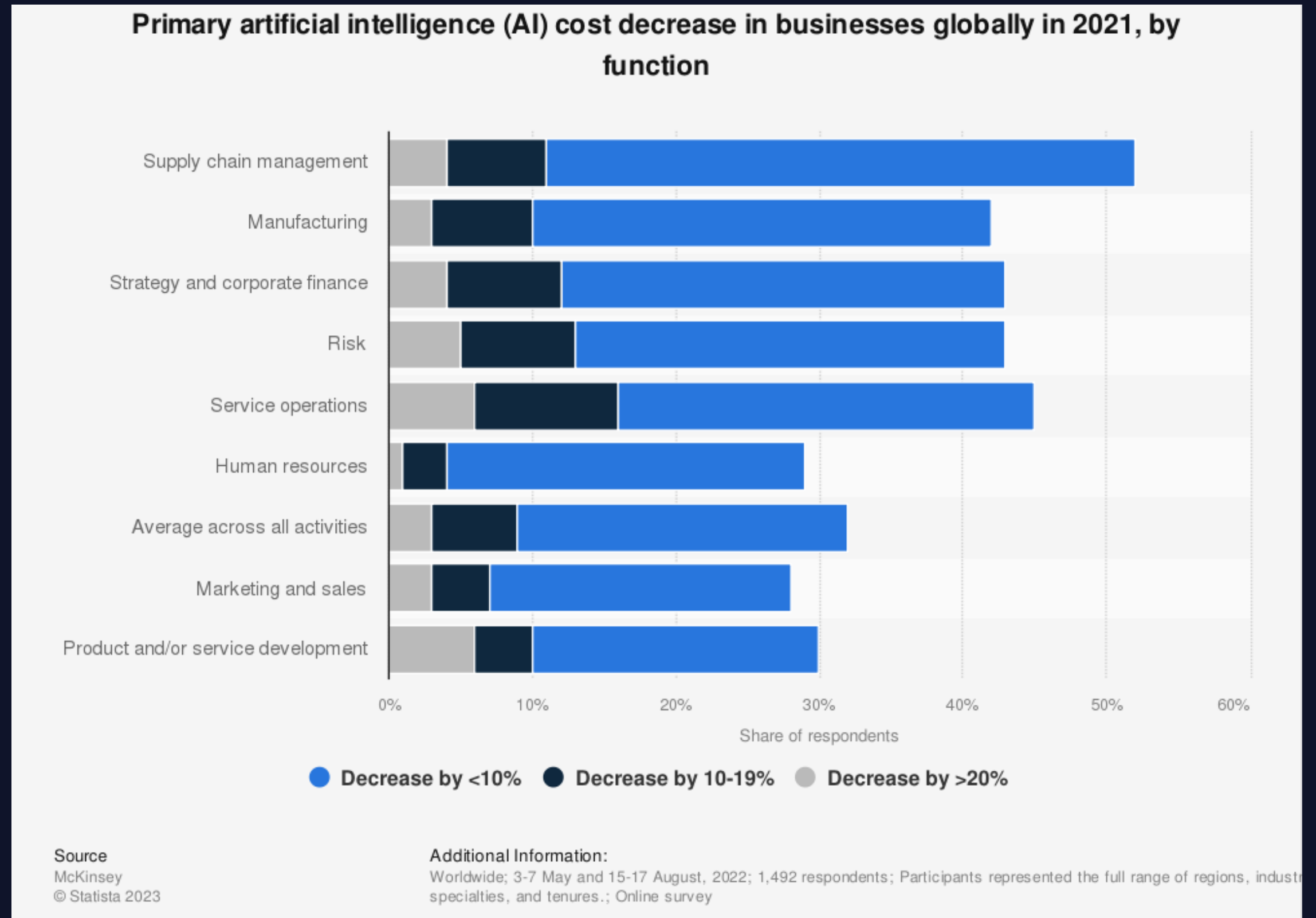
4 Main types of  
Blockchain





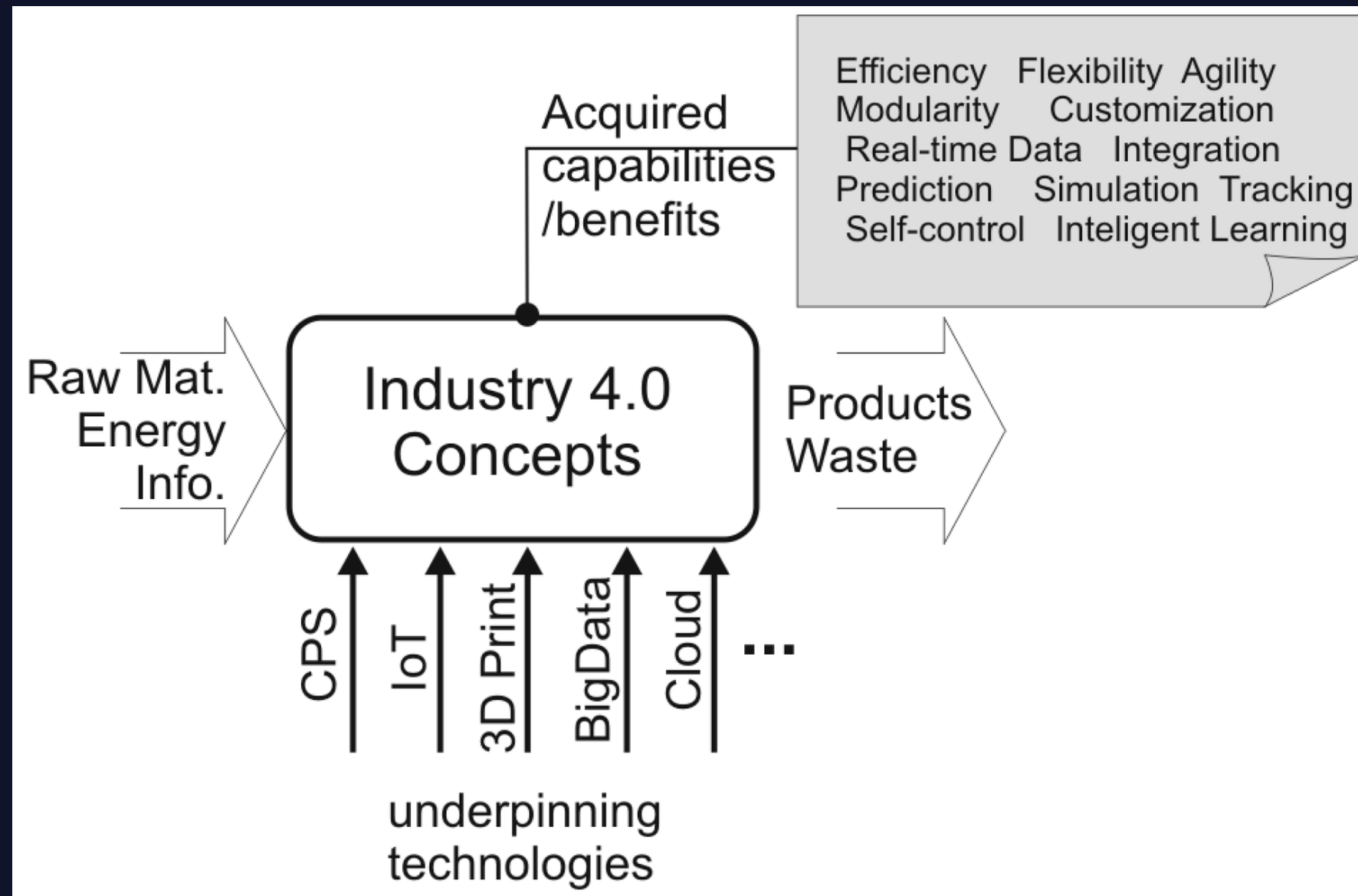
# V) DT Missions and Actions for GMS

- By: De-capitalization

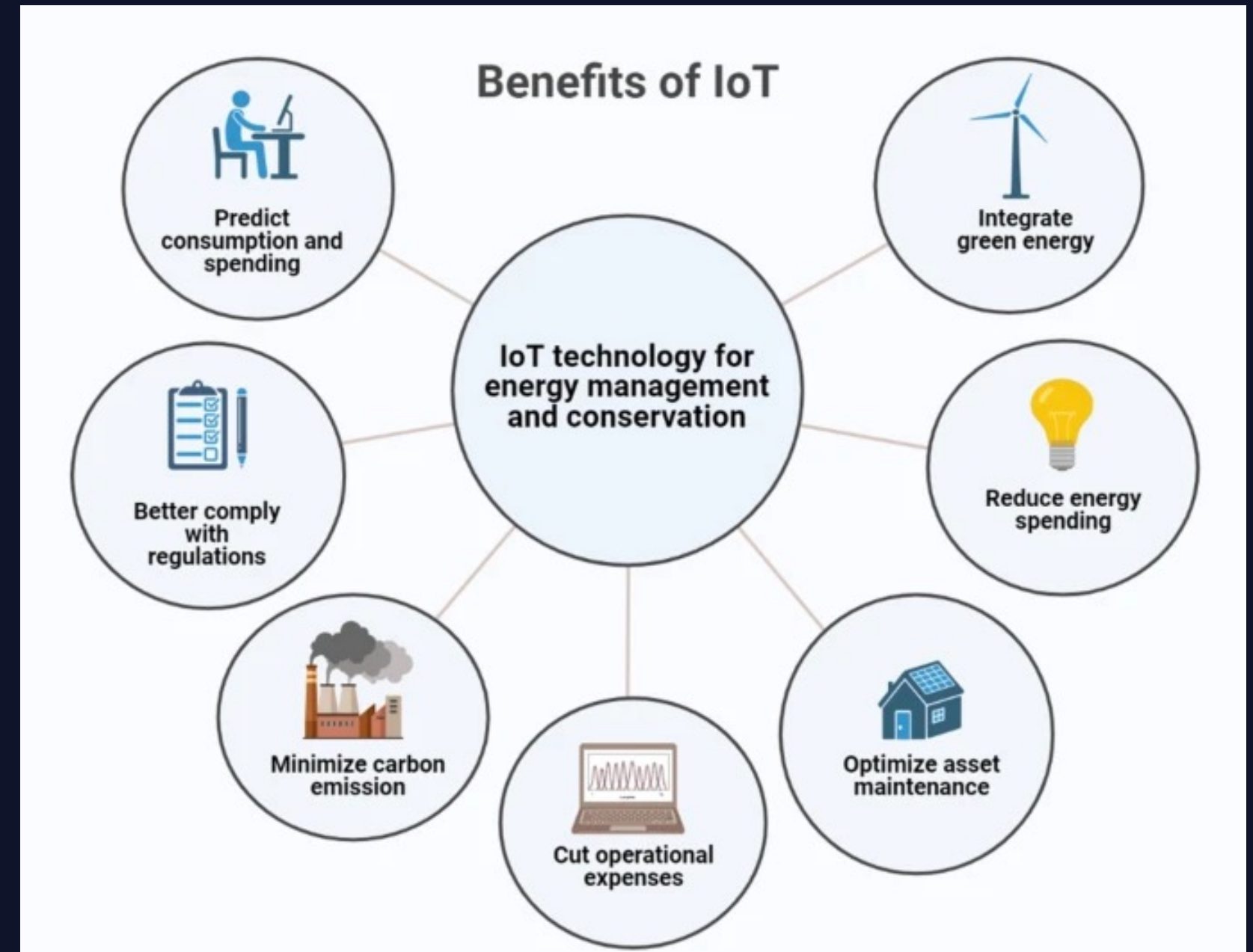


# V) DT Missions and Actions for GMS

- By: De-materialization



The underpinning technologies of Industry 4.0 and the acquired capabilities that emerge when they are adopted by production processes.



Benefits of IoT to Energy management and conservation



# V) DT Missions and Actions for GMS

- By: De-labourization



Drone Use in Crop Management



Smart Farming System



# V) DT Missions and Actions for GMS

- By: De-carbonization



The Laotian Times

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Allianz ໓໓ ອາລີອັນສ໌ ປະກັນໄພ ໃຫ້ໂຊກ ຊື່ປະກັນໄພນີ້ ລຸ້ນຮັບ ລົດຈັກໄຟຟ້າ ຈຳນວນ 3 ລາງວັນ ໂທລະທັດ Smart TV 43" ຈຳນວນ 6 ລາງວັນ Neo QLED >>> Smart TV 43"

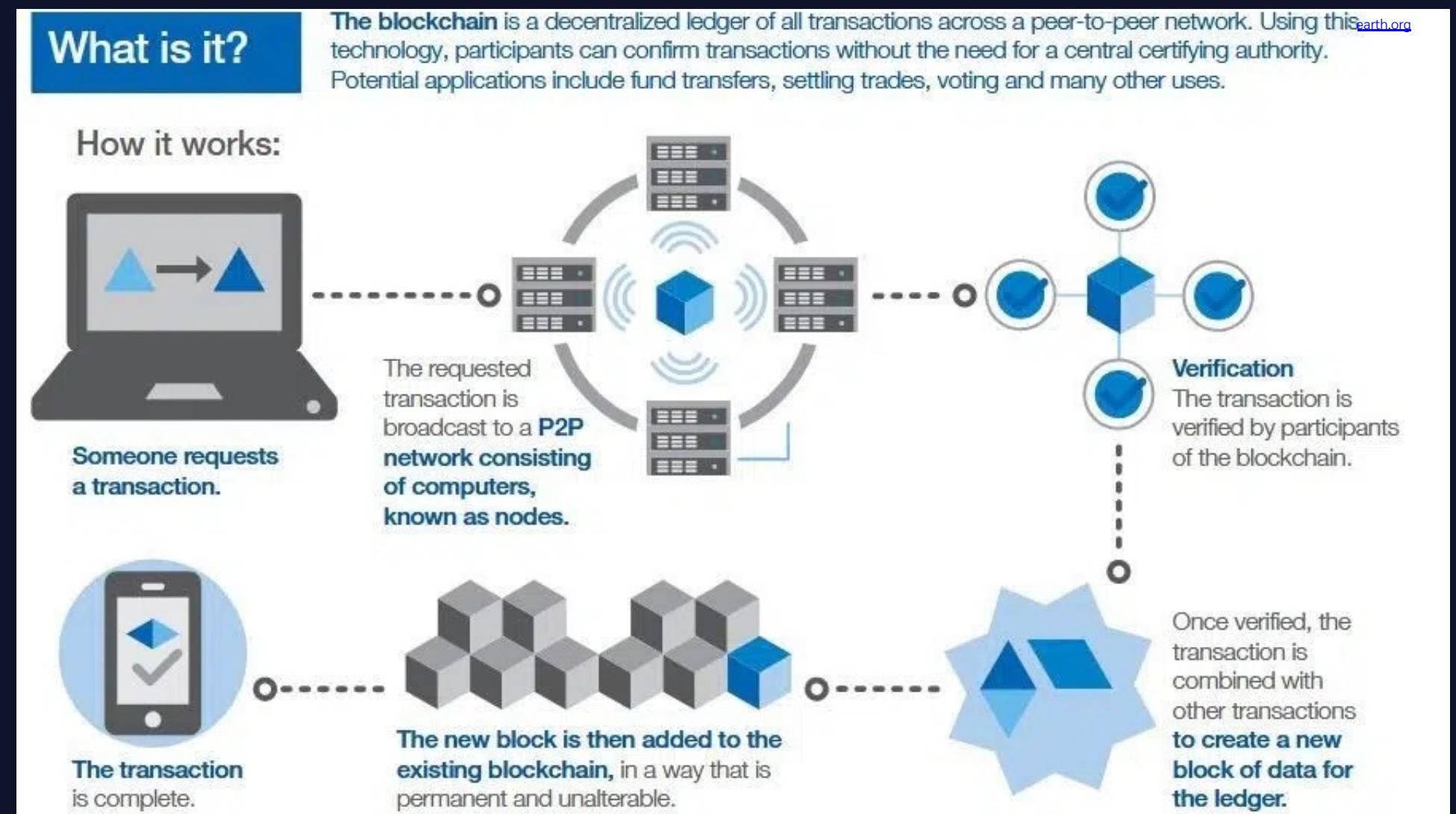
ALL NEWS HEALTH & ENVIRONMENT CLIMATE CHANGE ENVIRONMENT

## Laos Launches Forest Carbon Credit Initiative to Combat Climate Change

2621

By Phontham Visapra May 9, 2024

azlaos.com/lo\_LA/customer-service/\_html



Blockchain in Carbon Credit+ Tokenization



# VI) Implications for GMS Cooperation



-Stakeholders should have knowledge of DT capabilities and how to use DT for Digital Transformation by Design



-Public and Private institutions should have policies to use DT, AI, Generative AI for the Vision and Missions that cater to Public interests



-Emphasis on DT Accessibility and Literacy for Society as a Whole