



Can the Metaverse offer benefits to developing countries?

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Market estimates for 2030

(Source Citi)

Metaverse narrow definition

- 900mn-1bn VR/AR headset users
- Total addressable market \$1tn-\$2tn

Metaverse broad definition

- 5bn unique internet users
- Total addressable market \$8tn-\$13tn

The metaverse represents a transition from the information age to the experience age according to Mike Wadhera the founder of Teleport.



Metaverse: Google Trends (March 23, 2022, worldwide)

Interest over time ?





Prominent use cases for the Metaverse



Source: Citi Global Insights



Rapid training

Walmart has deployed 17,000 VR headsets to enhance employee training. It has cut training time for certain activities from 8 hours to 15 minutes without sacrificing effectiveness.

Verizon similarly reduced training time for call center agents dealing with angry customer calls from 10 hours to 30 minutes per agent.

Chinese Academy of Governance - party conferences and party history lessons.



Healthcare

- Seoul National University Bundang Hospital (SNUBH) is training medical staff in a smart operating room in the metaverse.
- In May 2021, the Asian Society for Cardiovascular and Thoracic Surgery (ASCVTS) taught over 200 thoracic surgeons about lung cancer surgery via a Metaverse platform during an online conference. They only required a head-mounted display.





Metaverse Seoul

- Seoul, is establishing a Metaverse platform as part of its Seoul Vision 2030 plan.
- This will include a virtual city hall and public service centers, allowing citizens to engage in virtual consultations with city officials, as well as tourism destinations.
- Other cities, such as Dubai are conducting Metaverse research as well.



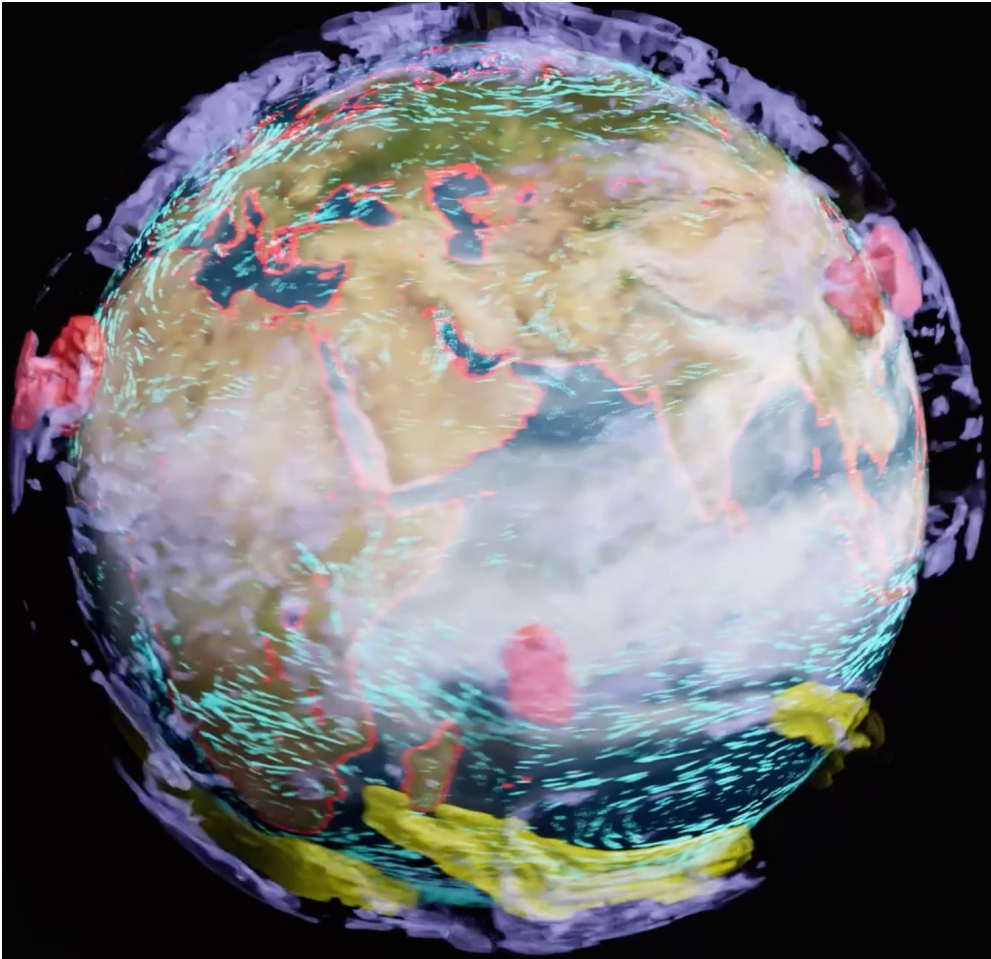
Smart Tourism

- Between 2060 and 2070, tourism which currently contributes 4.9% of global CO₂ emissions is likely to use the world's entire CO₂ budget consistent with a 1.5° C increase in global temperatures.
- German Federal Ministry for Economic Cooperation and Development (BMZ) and its new lab for digital innovations - digilab - in collaboration with the Make-IT Alliance.
- Develop Portoviejo (Ecuador) as a sustainable and smart destination.





Nvidia's Earth-2 project to create a digital twin of Earth



- In November 2021 NVIDIA revealed plans to build the world's most powerful AI supercomputer dedicated to predicting climate change.
- Named Earth-2, or E-2, the system will create a digital twin of Earth in Omniverse.
- Aims to offer ultra-high resolution climate modeling.



Facts on the fashion industry

Source: Fashionopolis by Dana Thomas

- Fashion is a \$2.4 trillion industry.
- It employs one out of six people globally, making it one of the most labor-intensive industries.
- Most employees are women.
- Fewer than 2 percent of garment workers earn a living wage.



Virtual fitting rooms



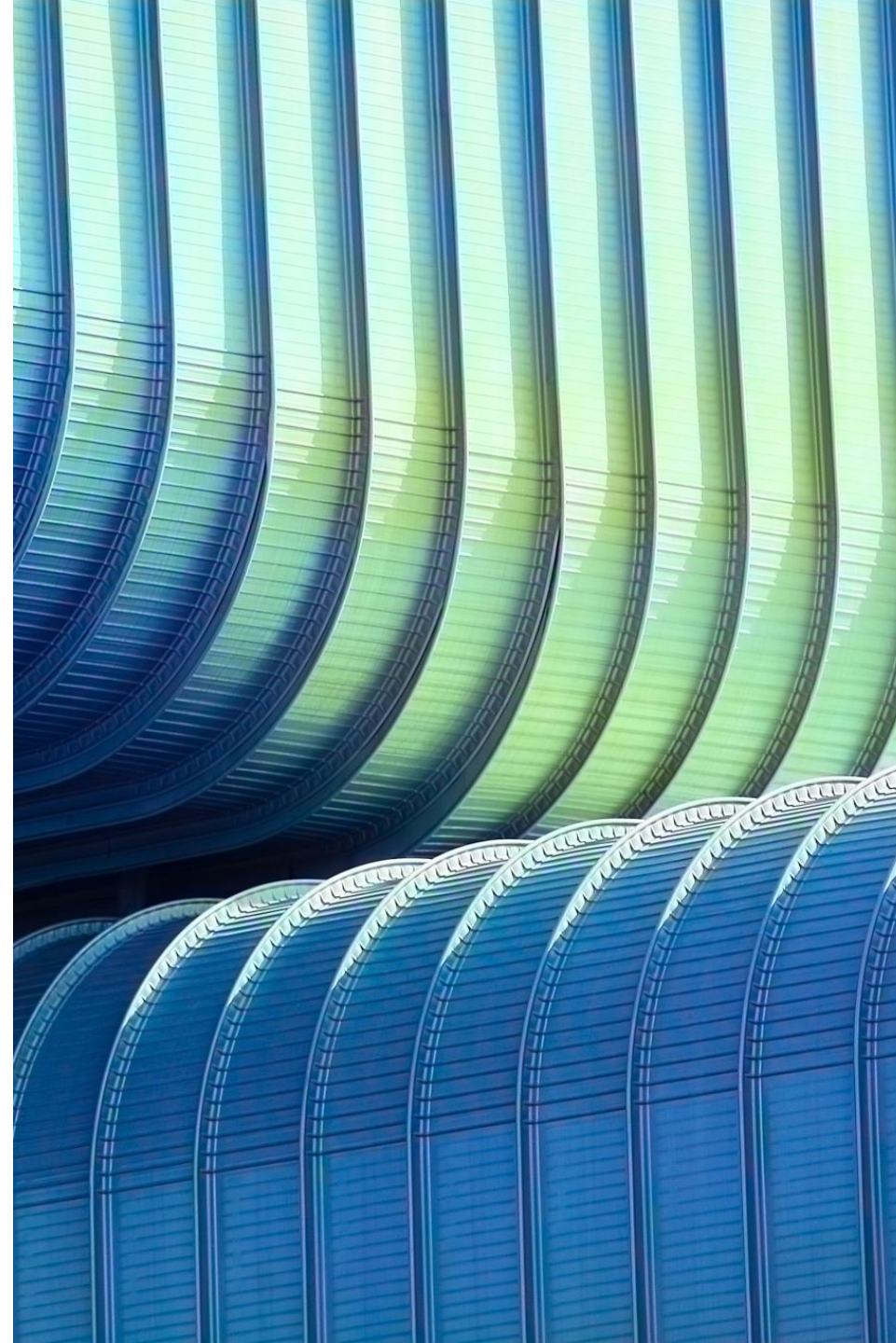


Smart manufacturing and the metaverse

- Boeing is investigating the use of digital twin technology to construct planes in the Metaverse.
- Siemens Energy has created digital twins to provide predictive maintenance for power plants.



Bringing Digital Twins to Manufacturing SMEs



Liberland

- 7 sq kms space between Croatia and Serbia.
- Zaha Hadid Architects (ZHA) has developed the Liberland metaverse.
- Parametric design uses algorithms to create complex forms.
- Hybrid and mixed reality spaces are the future.
- Investment in Liberland Metaverse = gaining a stake in Liberland





Zaha Hadid Architects - Metaverse city Liberland





TECH & DIGITAL
A NEOM VENTURE

February 1st, 2022

NEOM TECH & DIGITAL CO. UNVEILS XVRS – A FIRST-OF-A-KIND, COGNITIVE DIGITAL TWIN METAVERSE PLATFORM

XVRS core features

- Dynamic digital twin: 'It will be a mixed-reality twin' with 'live cognitive virtual twins'
- Immersive mixed reality: Enabling simultaneous physical-digital presence
- Digital assets marketplace: Built-in crypto and NFT monetization and transaction platform



Regulatory challenges

- The issue of regulating the metaverse and Web 3.0 was raised in India's Parliament today.
- Problems with current social media according to Louis Rosenberg
 - Monitoring
 - Manipulation
 - Monetization
- Each of these will get amplified in the metaverse
 - Monitoring: mobility tracking, eye movements, interest, facial expressions, vocal inflections, posture, heart rate.
 - Manipulation: AI or simulated influencers, virtual product placements, corporate sponsorships of objects in field of view.
 - Monetization of highly granular data



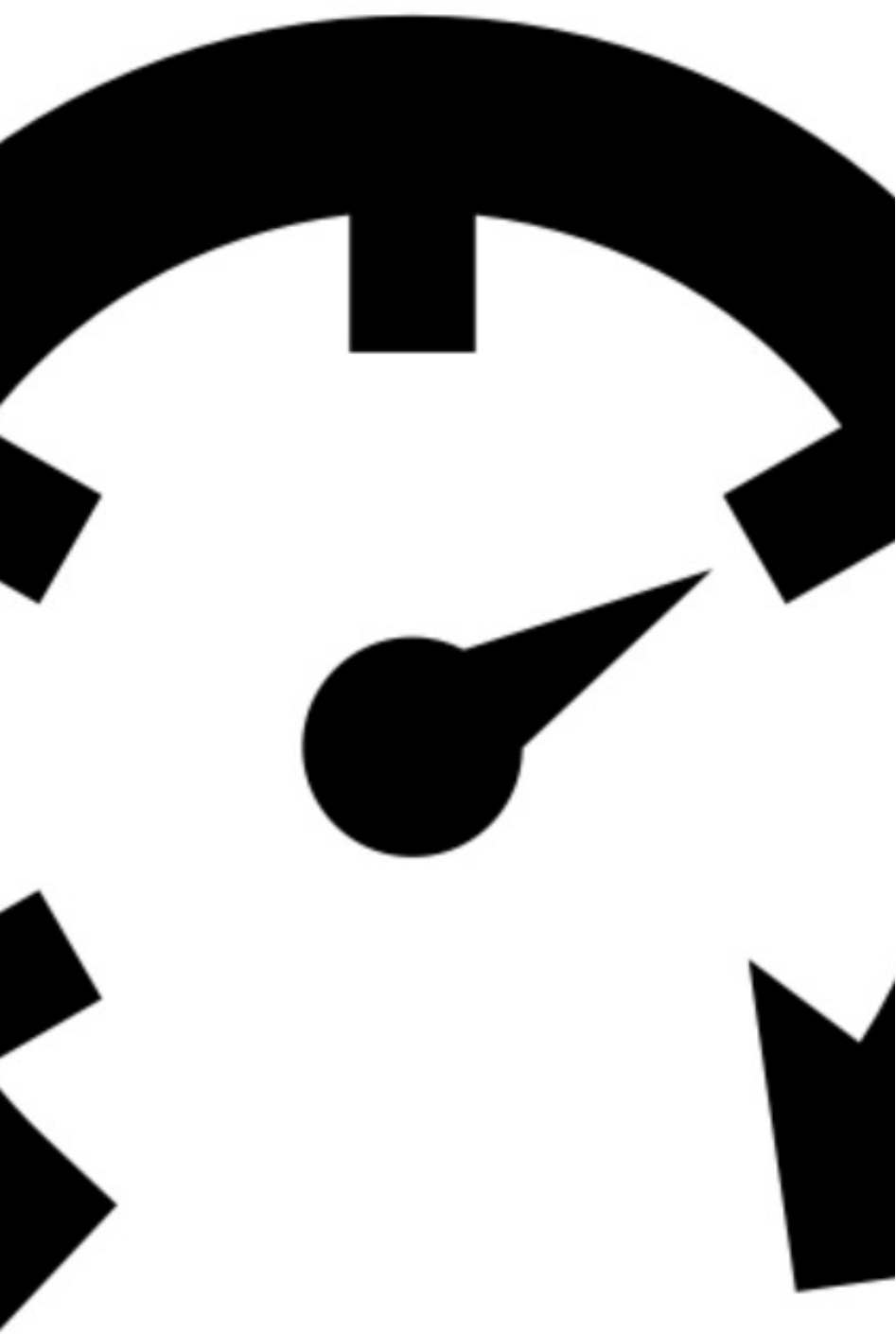
Regulatory responses

- Checks
 - Transparency in what data is being collected and how it is being used
 - Notifying users of advertisements
 - Distinguishing artificial agents
 - Constraints on the creation of hyper-accurate user profiles over time
 - Constraints on storage of biometric data include heart rates except for medical purposes
- If large corporations control metaverse platforms they will have more power and influence than any form of media anytime in history.



Other regulatory challenges

- Cybersecurity
 - NFT scams
 - Frauds in Ethereum addresses
- Cybercrime
 - Cyber bullying, doxing, ransomware
 - Virtual homicides
- Copyright and trademarks
- Crypto regulations (purchase of land on Sandbox requires crypto)
- Data portability between different metaverses
- Taxation
- Trade barriers – financial services
- Anti trust regulation
- Worker classification



Infrastructure latency requirements



VIDEO CALLING/CLOUD
GAMING
75-150MS



MULTI-PLAYER COMPLEX
GAMES
30MS



IMMERSIVE METAVERSE
EXPERIENCES
SUB 12MS

National strategy on digital twins

- UK's National Digital Twin program (NDTp) is run by the Centre for Digital Built Britain, a partnership between the University of Cambridge and the Department for Business, Energy and Industrial Strategy.
- New Zealand considering digital twins as part of its Digital Strategy for Aotearoa under preparation.
- Virtual cities – Singapore, Shanghai
- The New South Wales Government has launched the NSW Spatial Digital Twin, a digital representation of 8,500 square kilometers in Western Sydney. It includes more than half a million buildings, 20,000 km of roads, 22 million trees and 7,000 strata plans.



Thank you

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