METAVERSO

Posibilidades pedagógicas en educación y simulación en Ciencias para la Salud

Fernando Álvarez López, PhD
Cirujano Pediátrico
Máster en e-Learning
@feralverzlo

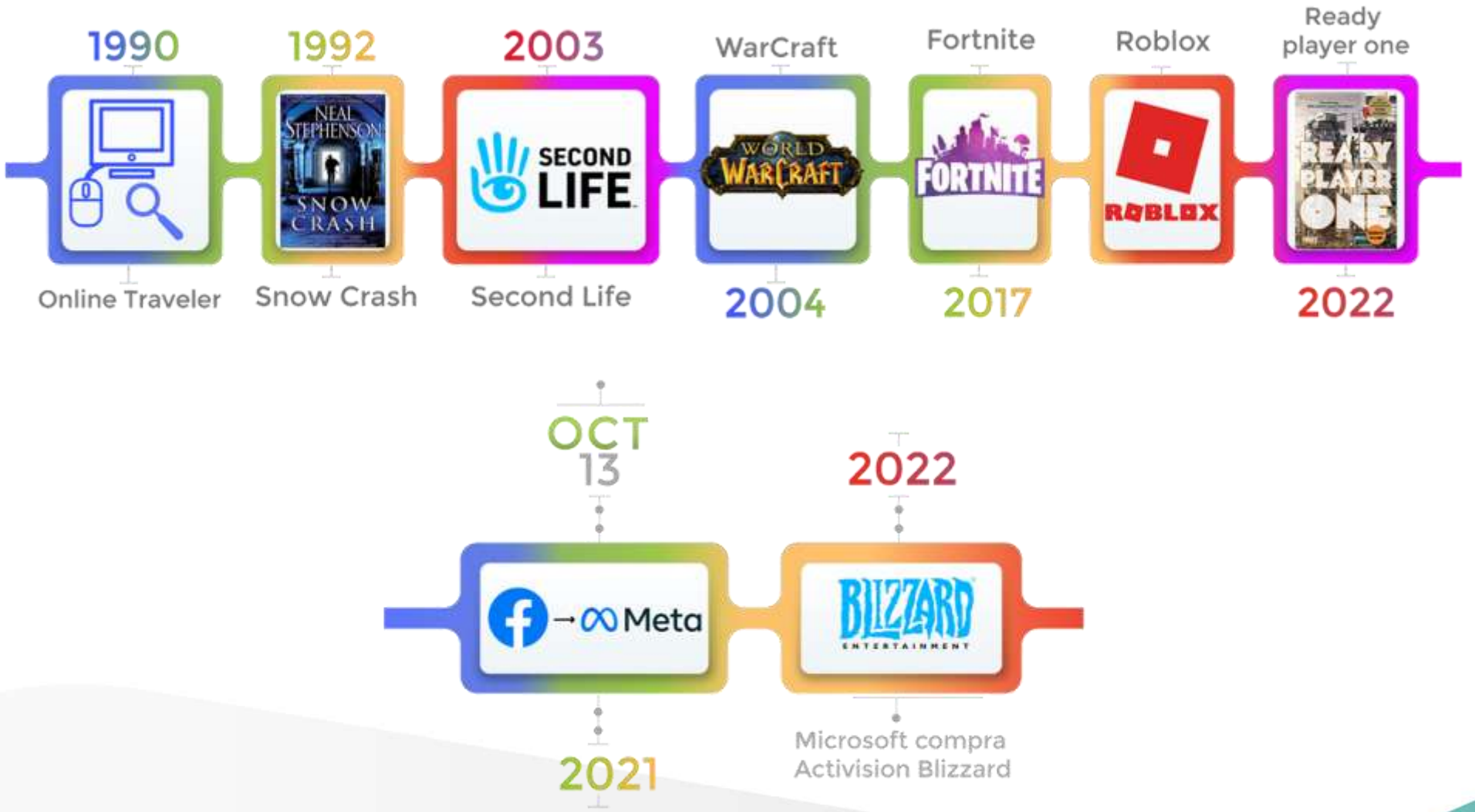
Telesalud Universidad de Caldas

Acreditación Institucional de Alta Calidad Resolución 4792 del 15 de mayo de 2019
Universidad de Manizales

Profesor Asociado
Universidad de Manizales

2º Congreso Mundial sobre Educación Médica
Cartagena 28 - 29 sep 2023
ASCOFAME 64 años

Línea de tiempo



Wiederhold, B. K. (2022). Metaverse Games: Game Changer for Healthcare? Cyberpsychology, Behavior and Social Networking, 25(5), 267–269. https://doi.org/10.1089/CYBER.2022.29246.EDITORIAL

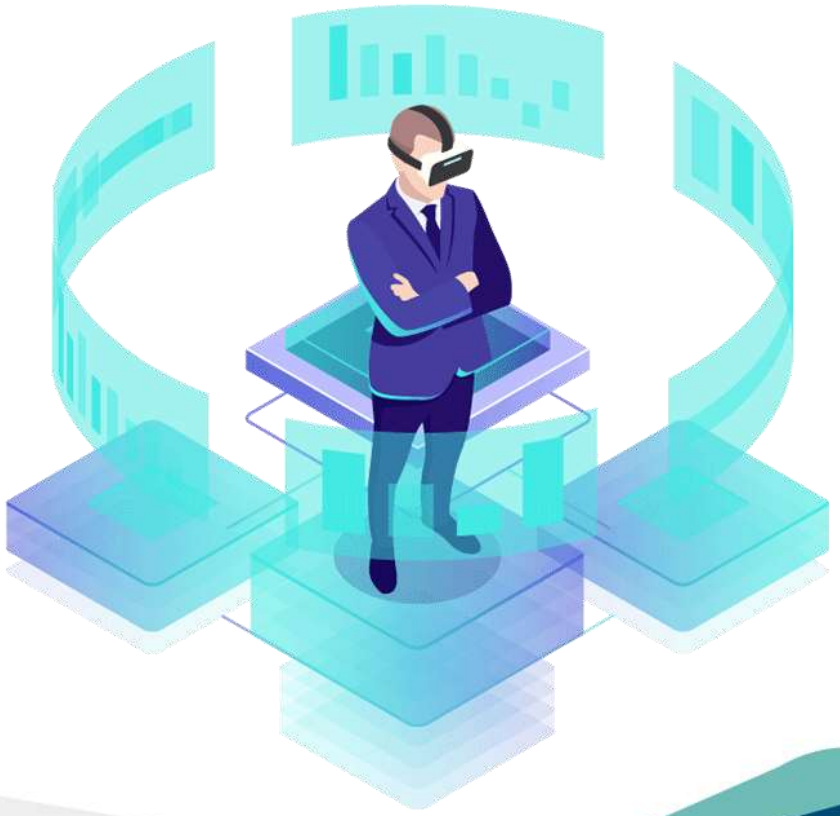
Definición

Es una red de entornos virtuales donde las personas **interactúan** entre ellas y con otros objetos digitales. El prefijo **“meta”** se refiere al mundo virtual y el sufijo **“verso”** al mundo físico. Los usuarios del metaverso poseen una representación de sí mismos denominada **avatar** (caracteres en los juegos multiusuario). La interacción es **persistente**, requiere **interoperabilidad** y **conectividad masiva** y **ubicua.**

Es un escalamiento de la Web 2.0 en 2D hacia una Web 3D donde se logra la convergencia entre la **realidad física**, la **realidad virtual**, las **redes sociales**, los juegos multiusuario en línea y múltiples conceptos de la **cuarta revolución industrial**

Kye, B., Han, N., Kim, E., Park, Y., & Jo, S. (2021). Educational applications of metaverse: possibilities and limitations. Journal of Educational Evaluation for Health Professions, 18. https://doi.org/10.3352/JEEHP.2021.18.32
Werner et al. (2022). The use of metaverse in fetal medicine and gynecology. European Journal of Radiology, 150. https://doi.org/10.1016/J.EJRAD.2022.110241

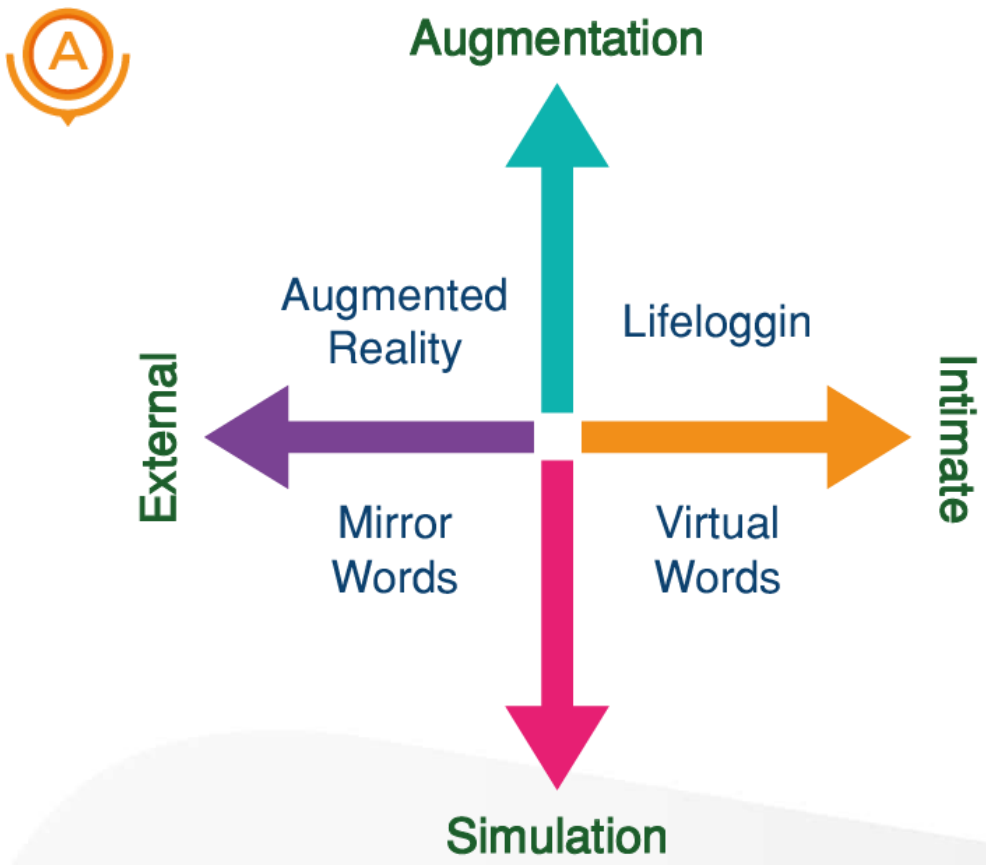
De Flexner al Metaverso

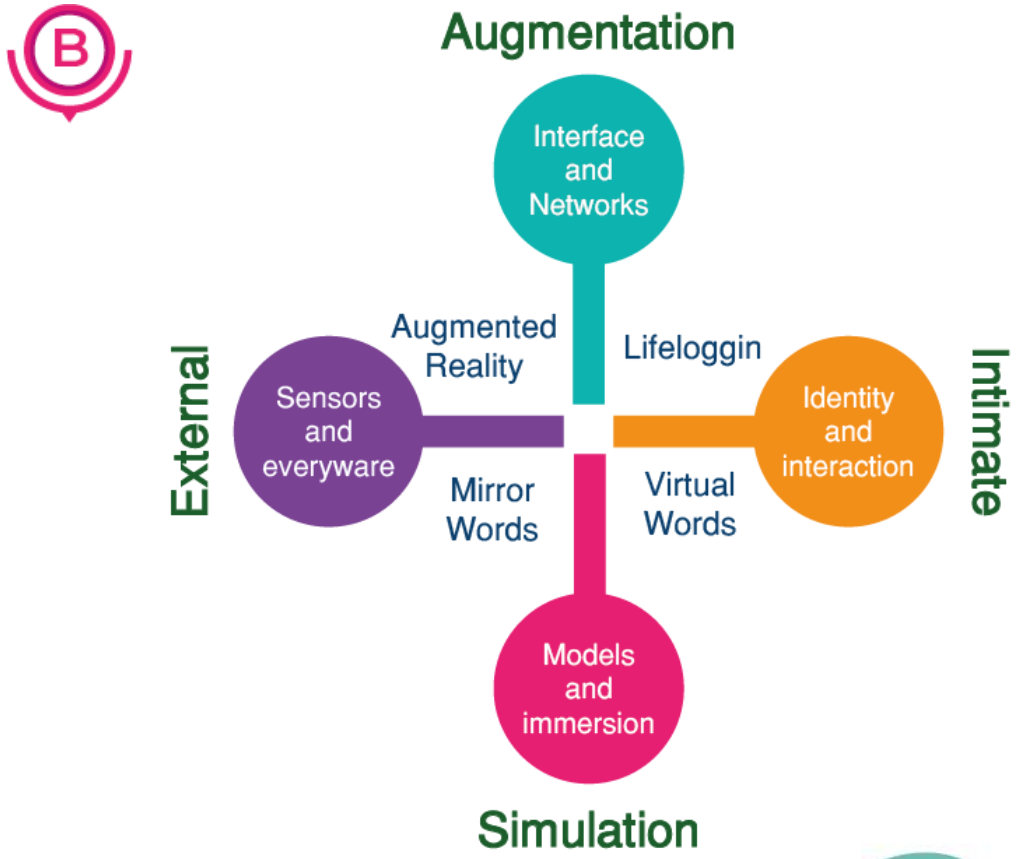


Borkan, J. M., Hammoud, M. M., Nelson, E., Oyler, J., Lawson, L., Starr, S. R., & Gonzalo, J. D. (2021). Health systems science education: The new post-Flexner professionalism for the 21st century. https://doi.org/10.1080/0142159X.2021.1924366

Espectro del metaverso

Visión inicial

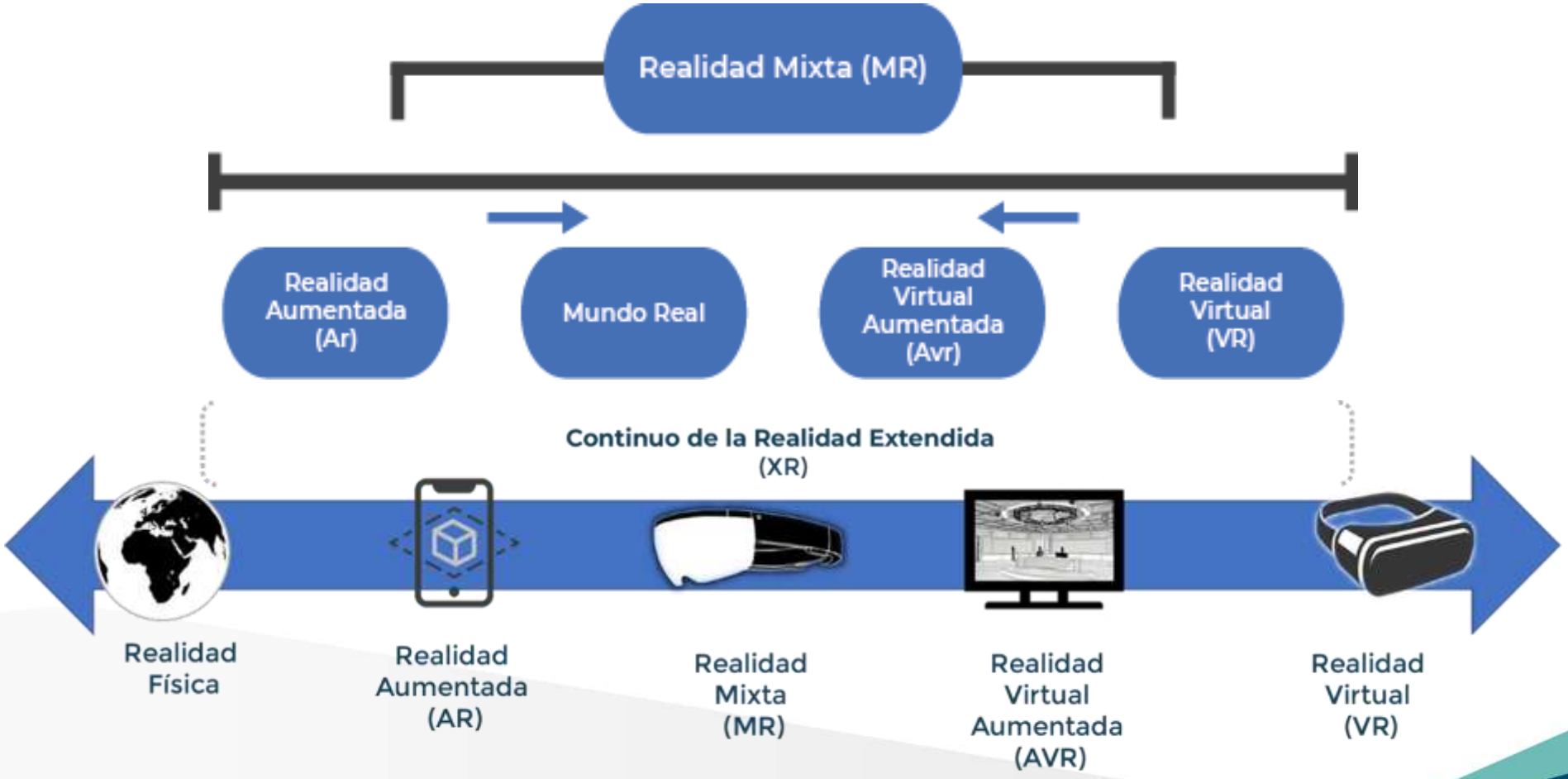




Smart, J., Cascio, J., & Paffendorf, J. (2007). Metaverse Roadmap Overview. Pathways to the 3D Web. https://www.metaverseroadmap.org/overview/

Espectro de la realidad extendida (XR)

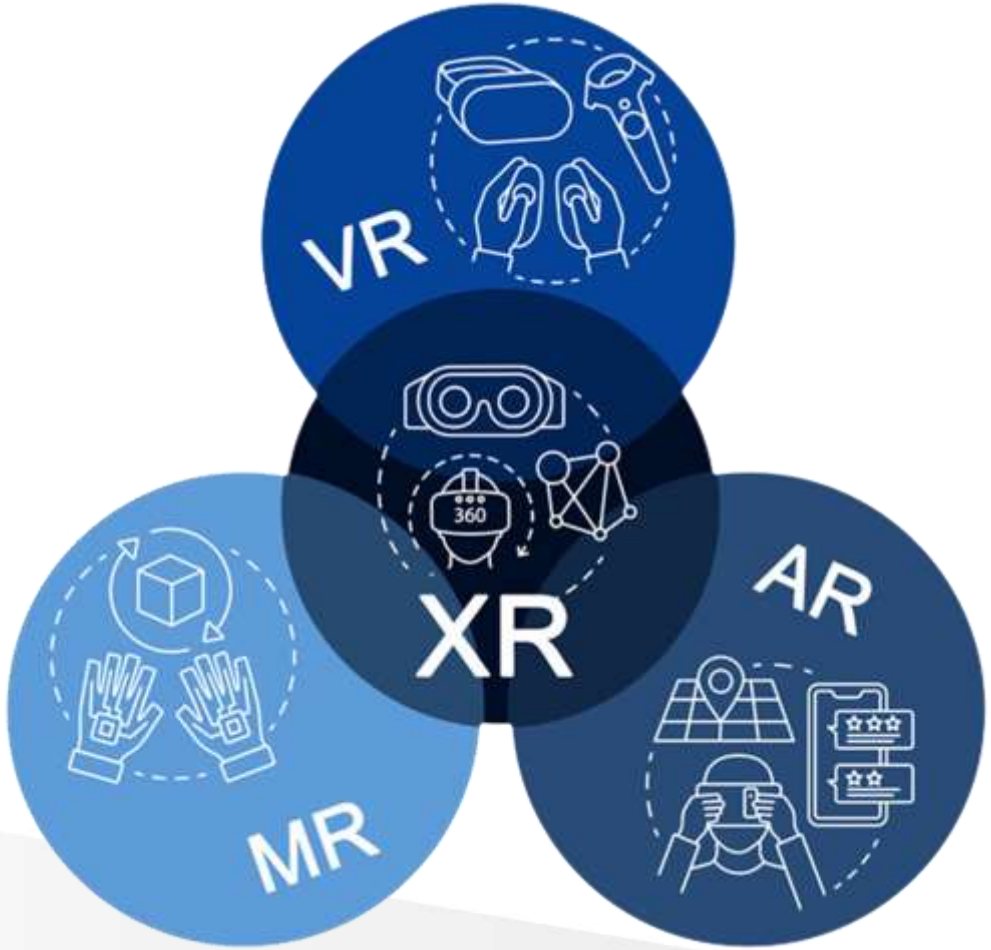
Evolución del concepto



Milgram, P., & Kishino, F. (1994). A Taxonomy of Mixed Reality Visual Displays. IEICE Transactions on Information and Systems, E77-D(12), 1321–1329.

Espectro de la realidad extendida (XR)

Evolución del concepto



Milgram, P., & Kishino, F. (1994). A Taxonomy of Mixed Reality Visual Displays. IEICE Transactions on Information and Systems, E77-D(12), 1321–1329.

Realidad virtual no inmersiva
(Era Second Life)

Uso de simulación con realidad virtual 3D mediada por gestos para el aprendizaje de destrezas psicomotoras básicas en cirugía mínimamente invasiva.

Una tesis doctoral

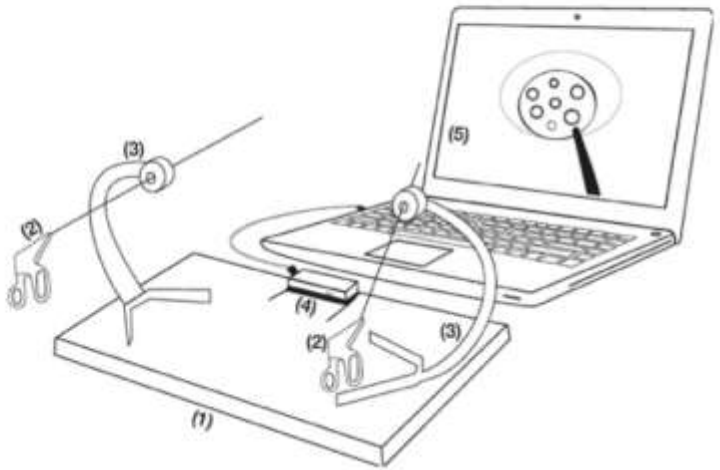
Imagenes generados por Dall-e

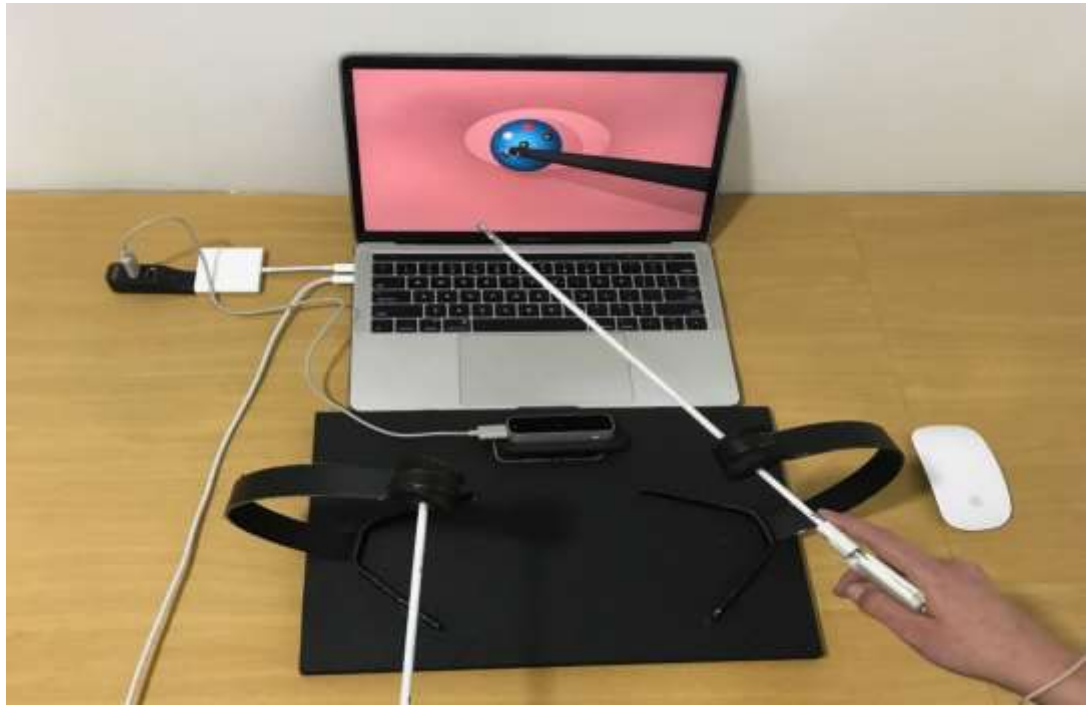
Alvarez-Lopez, F (2021). Uso de simulación con realidad virtual 3D mediada por gestos para el aprendizaje de destrezas psicomotoras básicas en cirugía mínimamente invasiva. Tesis Doctoral. UOC, Barcelona

SiMisGest-VR

Figure 5. Diagram of the artefact.

1. Support pad:
   - Length: 35 cm
   - Width: 25 cm
   - Height: 1.5 cm
2. Forceps of MIS:
   - Length of the stem: 33 cm
3. Forceps support device:
   - Height: 22.5 cm
   - Distance between the top of the devices: 16.5 cm
4. Leap Motion Controller:
   - Length: 8 cm
   - Width: 3 cm
   - Height: 12 mm
5. Virtual environment





Alvarez-Lopez, F (2021). Uso de simulación con realidad virtual 3D mediada por gestos para el aprendizaje de destrezas psicomotoras básicas en cirugía mínimamente invasiva. Tesis Doctoral. UOC, Barcelona

Realidad virtual inmersiva
Usos en el área de la salud

https://www.simxvr.com/

- Manejo del dolor
- Manejo de la ansiedad durante procedimientos
- Terapia física y rehabilitación
- Planeación de procedimientos quirúrgicos
- Educación
- Simulación

Calvet, L., Bourdin, P., Teatre, E., & Prados, F. (2019). Immersive Technologies in Higher Education: Applications, Challenges, and Good Practices. https://doi.org/10.1145/3371647.3371667

Realidad virtual aumentada

http://www.virtualstudio.tv/

Realidad aumentada
Códigos QR / Pokémon Go

Liu, D., Dede, C., Huang, R., & Richards, J. (Eds.). (2017). Virtual, Augmented, and Mixed Realities in Education. Springer Nature. https://doi.org/DOI 10.1007/978-981-10-5490-7_2

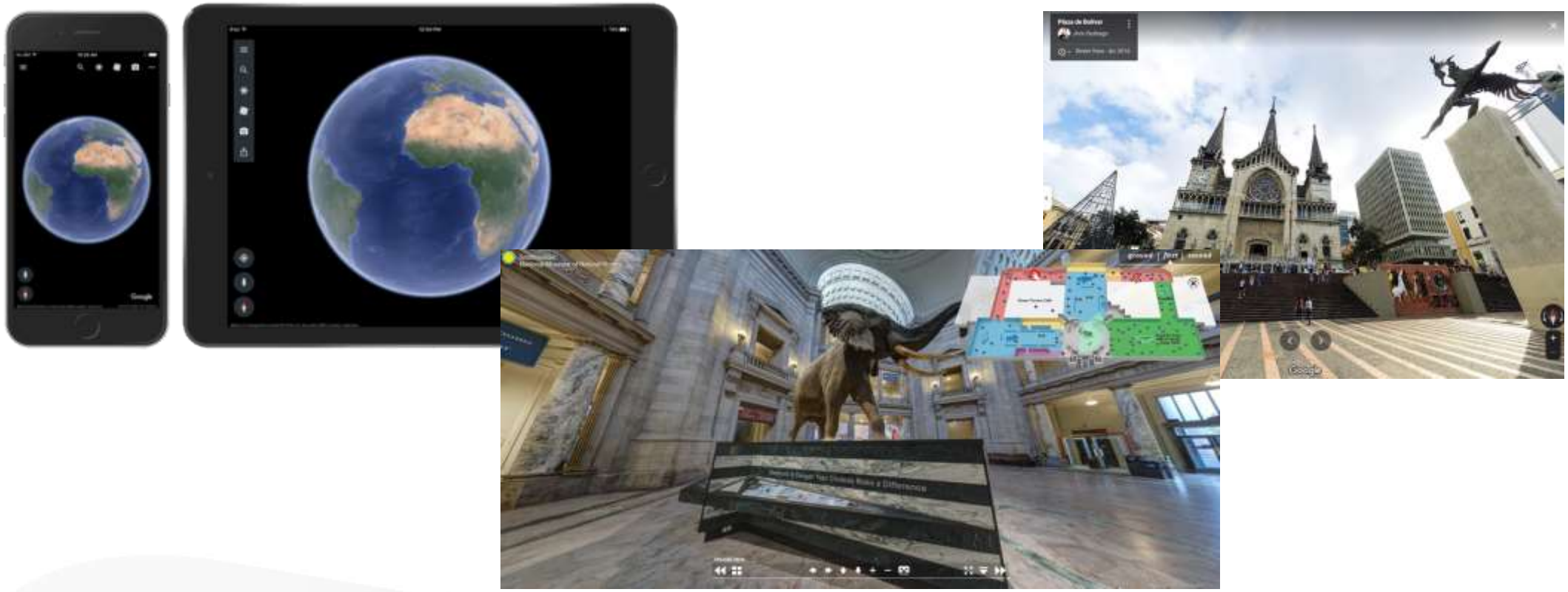
Realidad mixta

Realidad disminuida

a. La realidad
b. Realidad aumentada
c. Realidad disminuída

Laroche, J., Vuarnesson, L., Endaltseva, A., Dumit, J., & Bachrach, A. (2021). [Re]moving Bodies - A Shared Diminished Reality Installation for Exploring Relational Movement. Frontiers in Psychology, 12. https://doi.org/10.3389/FPSYG.2021.539596

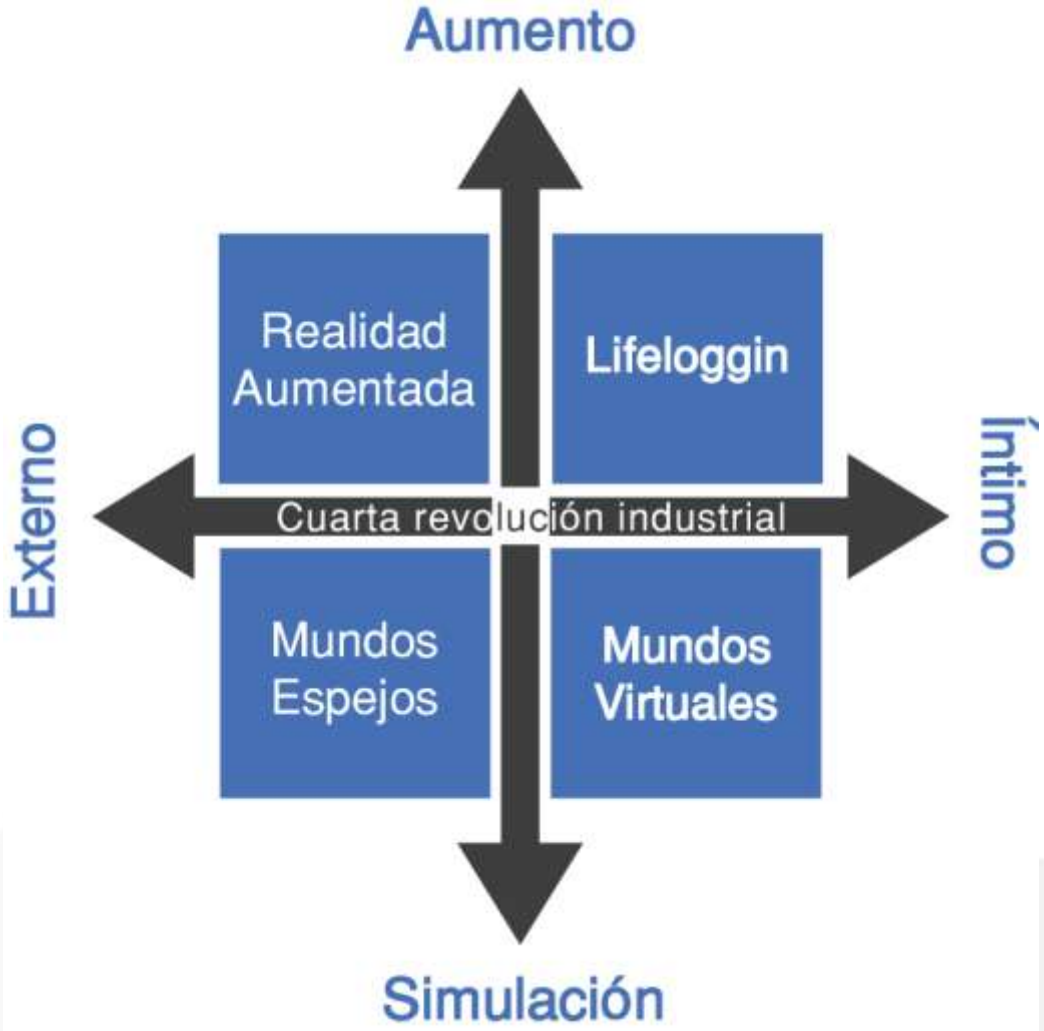
Mundos espejo



Ovunc, S. S., Yolcu, M. B., Emre, S., Elicevik, M., & Celayir, S. (2021). Using Immersive Technologies to Develop Medical Education Materials. Cureus, 13(1). https://doi.org/10.7759/cureus.12647

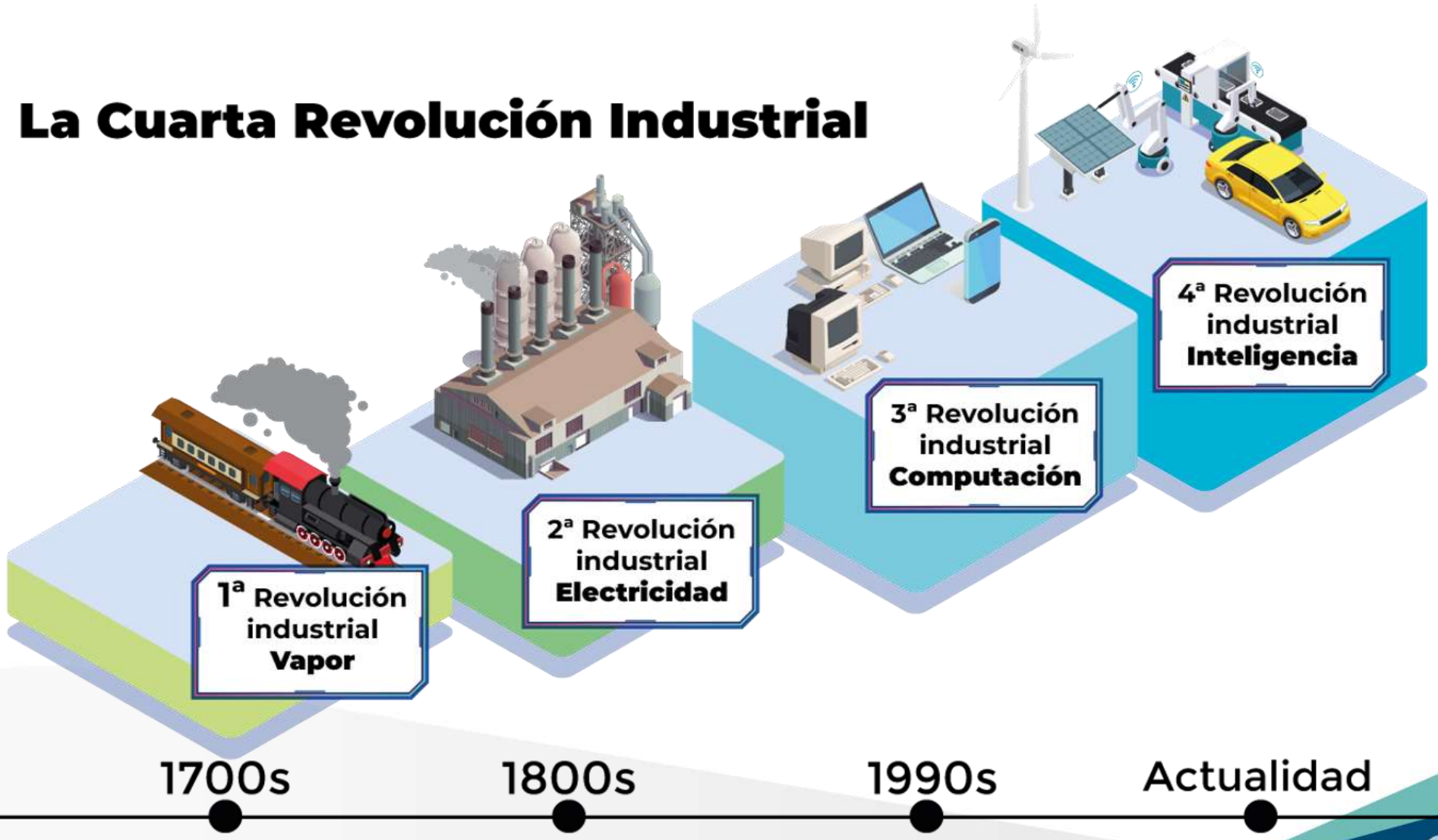
Aplicación práctica en simulación

"Affordances"

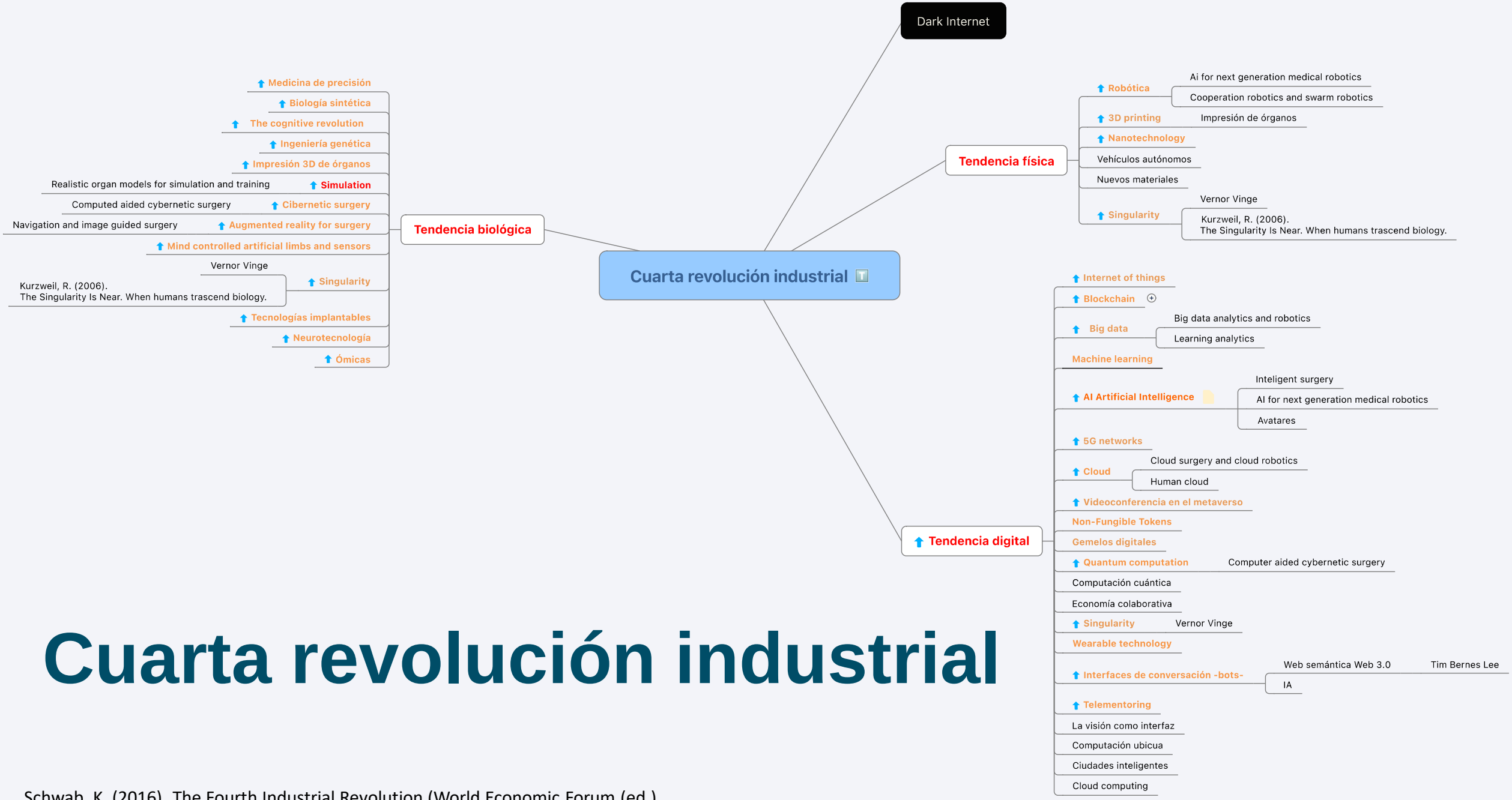


- **Realidad aumentada**
  - Códigos QR
  - Objetos virtuales complementarios (reducción de costos)
  - Simuladores de tareas parciales complementados con realidad aumentada
- **Gemelos digitales** de maniquíes de alta tecnología (simulación ubicua)
- **Recorrido virtual, instrucciones de uso**
- **Entornos virtuales inmersivos** de escenarios de simulación
- **Debriefing**
- **Bitácora**

Revoluciones industriales



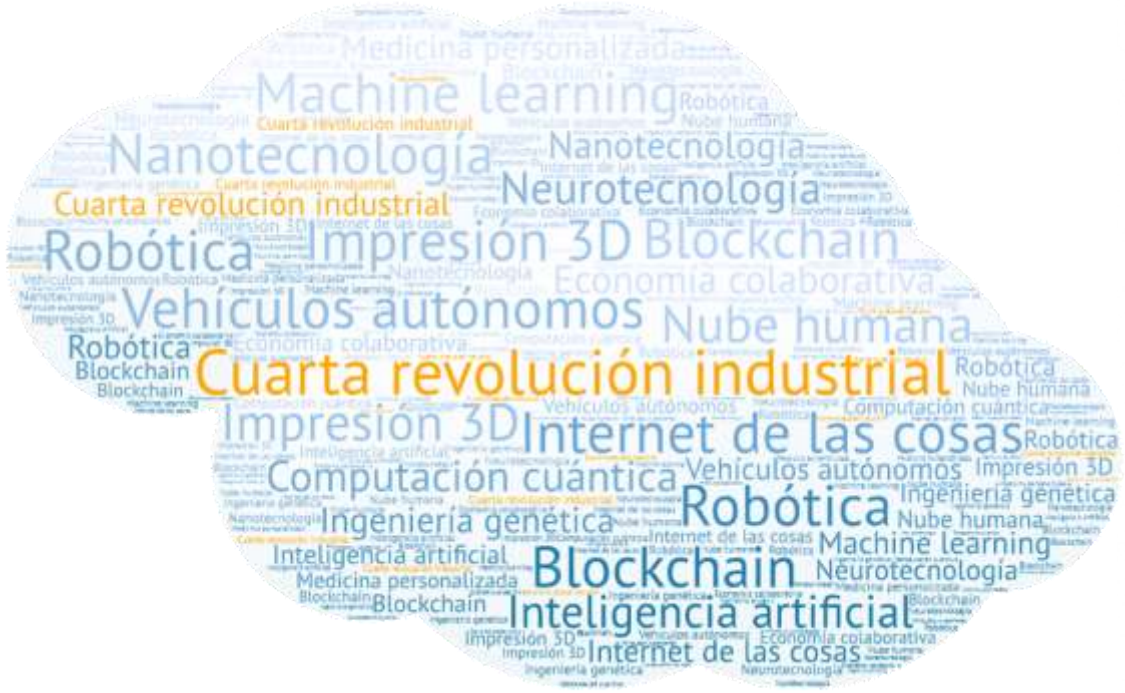
Schwab, K. (2016). The Fourth Industrial Revolution (World Economic Forum (ed.).

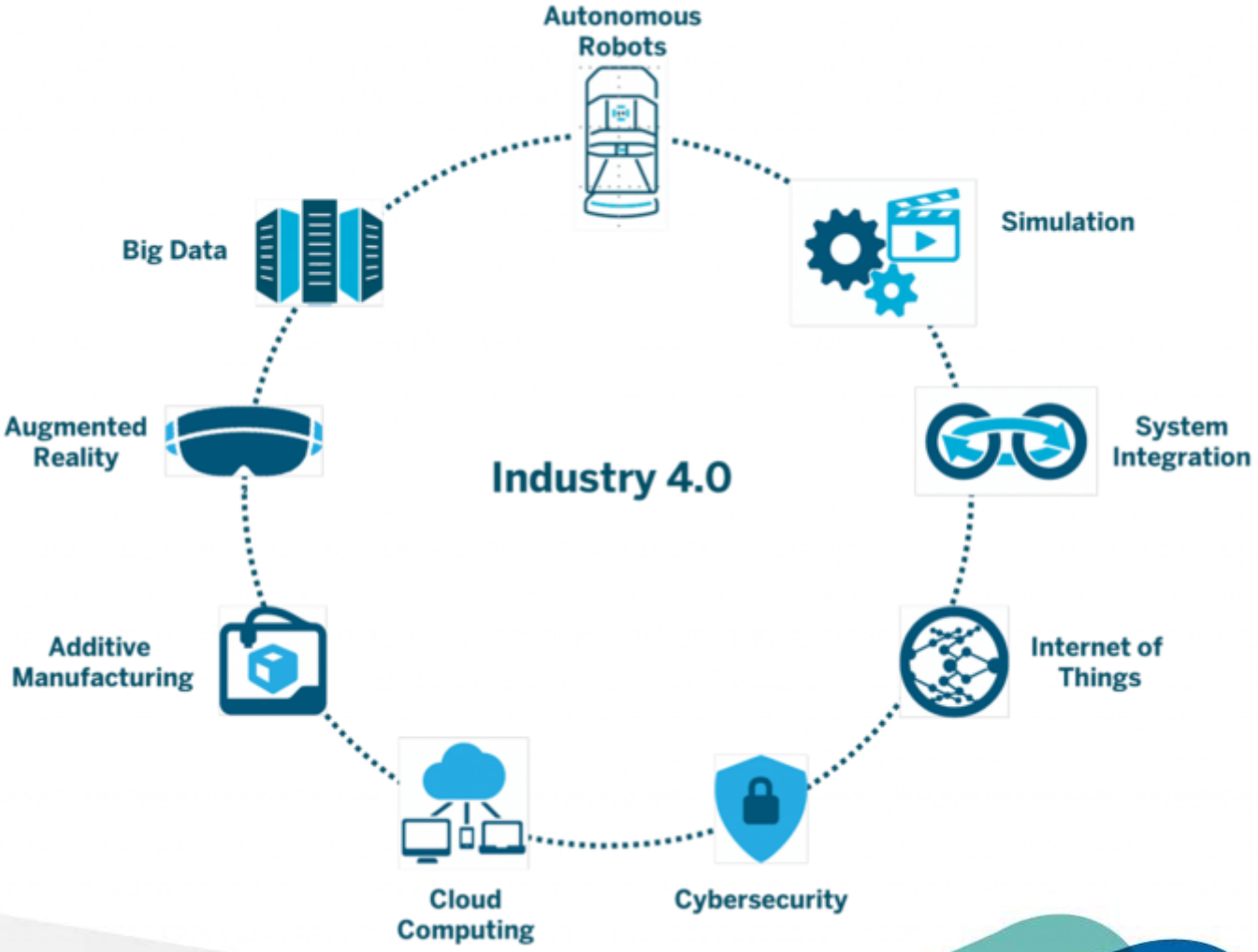


Cuarta revolución industrial

Schwab, K. (2016). The Fourth Industrial Revolution (World Economic Forum (ed.).

Cuarta revolución industrial





Schwab, K. (2016). The Fourth Industrial Revolution (World Economic Forum (ed.)).
https://www.penguinrandomhouse.com/books/551710/the-fourth-industrial-revolution-by-klaus-schwab/

Internet de las cosas

Kassab, M., DeFranco, J., & Laplante, P. (2020). A systematic literature review on Internet of things in education: Benefits and challenges. Journal of Computer Assisted Learning, 36(2), 115–127. https://doi.org/10.1111/jcal.12383

"Objetc lifelogs"

Hiperenlaces físicos

Internet de las cosas

Kye, B., Han, N., Kim, E., Park, Y., & Jo, S. (2021). Educational applications of metaverse: possibilities and limitations. Journal of Educational Evaluation for Health Professions, 18. https://doi.org/10.3352/JEEHP.2021.18.32

User "lifelogs"

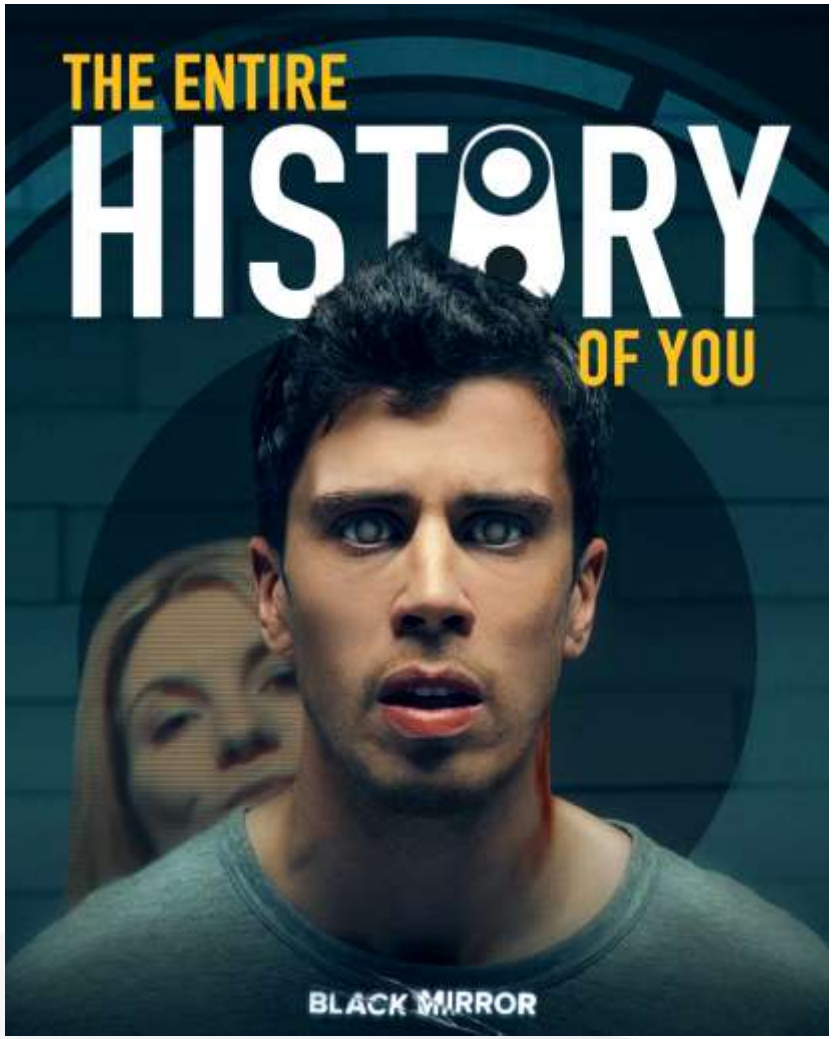
Dispositivos ponibles

Wearable technology

Kye, B., Han, N., Kim, E., Park, Y., & Jo, S. (2021). Educational applications of metaverse: possibilities and limitations. Journal of Educational Evaluation for Health Professions, 18. https://doi.org/10.3352/JEEHP.2021.18.32

Singularidad

BLACK MIRROR



BLACK MIRROR

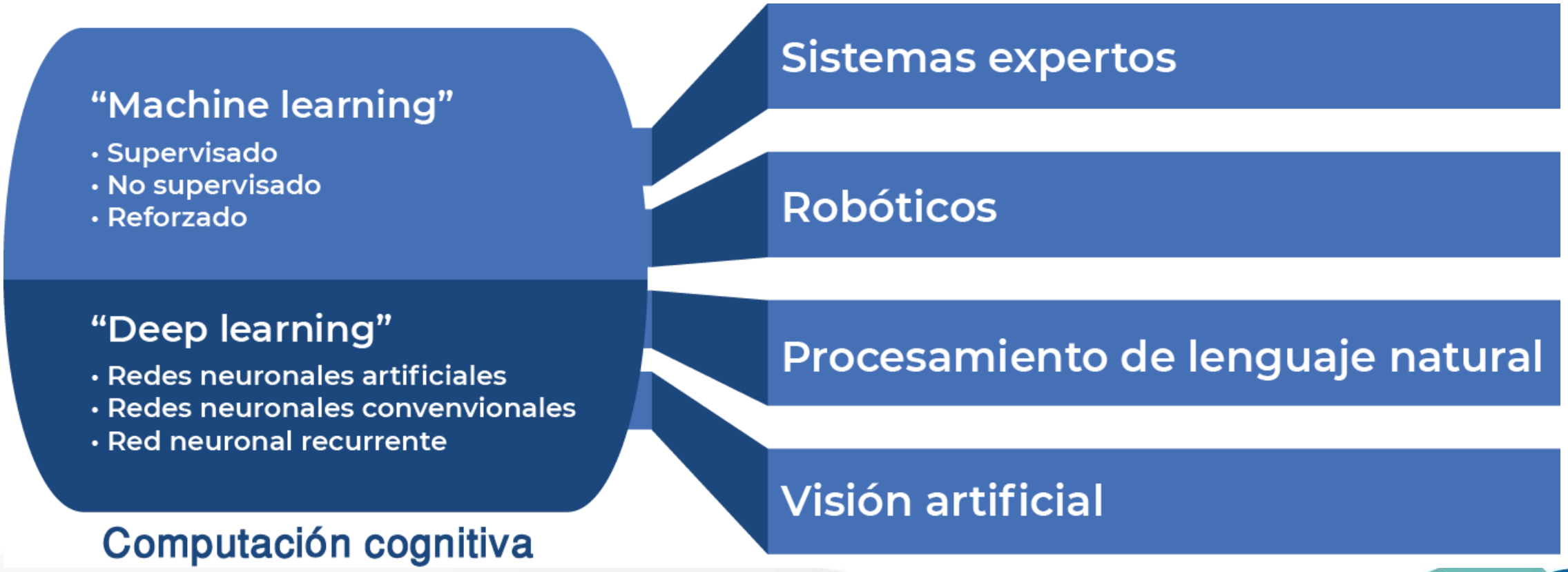
Brooker, C., Reisz, B., Jones, A., Bathurst, O., Huq, K., Lyn, E., Armstrong, J., ... 4 DVD (Firm),. (2012). Black mirror.
Kurzweil, R. (2006). The Singularity Is Near. When humans trascend biology. Penguin Books.

Inteligencia artificial

Anaya, M (Ed.) (2021). Inteligencia Artificial en Salud. Medicina, 43(4), 493–496

Inteligencia artificial

Panorama general de la inteligencia artificial IA



Inteligencia artificial

ChatGPT-3

NLP "Natural Language Proccesing"

Chatbot

Prompt

LLM "large language models"

GPT "Generative pre-trained transformer"

Inteligencia artificial

ChatGPT-3

www.oncoscience.us Oncoscience, Volume 9, 2022

Research Perspective

Rapamycin in the context of Pascal's Wager: generative pre-trained transformer perspective

ChatGPT Generative Pre-trained Transformer[2] and Alex Zhavoronkov[1]

[1]Insilico Medicine, Hong Kong Science and Technology Park, Hong Kong

[2]OpenAI, San Francisco, CA 94110, USA

Correspondence to: *Alex Zhavoronkov*, ***email***: *alex@insilico.com*

Keywords: artificial intelligence; Rapamycin; philosophy; longevity medicine; Pascal's Wager

Received: *December 14, 2022* ***Accepted***: *December 15, 2022* ***Published***: *December 21, 2022*

HAL open science

Can GPT-3 write an academic paper on itself, with minimal human input?

Gpt Generative Pretrained Transformer, Almira Osmanovic Thunström, Steinn Steingrimsson

Inteligencia artificial

ChatGPT-3

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Contents lists available at ScienceDirect

Nurse Education in Practice

journal homepage: www.elsevier.com/locate/issn/14715953

Editorial

Open artificial intelligence platforms in nursing education: Tools for academic progress or abu

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Adams, D., Chuah, K.M., 2022. Artificial intelligence-based tools in research writing: current trends and future potentials. Artificial Intelligence in Higher Education: A Practical Approach. CRC Press, pp. 169–184. https://doi.org/10.1201/9781003184157.

Bretag, T., Harper, R., Burton, M., Ellis, C., Newton, P., Rozenberg, P., van Haeringen, K., 2019. Contract cheating: a survey of Australian university students. Stud. High. Educ. 44 (11), 1837–1856. https://doi.org/10.1080/03075079.2018.1462788.

Marche, S. (2022). The college essay is dead: Nobody is prepared for how AI will transform academia. The Atlantic. Available at: https://www.theatlantic.com/technology/archive/2022/12/chatgpt-ai-writing-college-student-essays/672371/.

O'Connor, S., 2021. Artificial intelligence and predictive analytics in nursing education, 103224-103224 Nurse Educ. Pract. 56. https://doi.org/10.1016/j.nepr.2021.103224.

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Siobhan O'Connor[a,*,1], ChatGPT[b]

[a] *Division of Nursing, Midwifery, and Social Work, The University of Manchester, Manchester, United Kingdom*

[b] *OpenAI L.L.C., 3180 18th Street, San Francisco, CA 94110, USA*

* Corresponding author.

E-mail addresses: siobhan.oconnor@manchester.ac.uk (S. O'Connor), support@openai.com (ChatGPT).

Performance of ChatGPT on USMLE: Potential for AI-Assisted Medical Education Using Large Language Models

Tiffany H. Kung[1,2]; Morgan Cheatham[3]; ChatGPT[4]; Arielle Medenilla[1]; Czarina Sillos[1]; Lorie De Leon[1]; Camille Elepaño[1]; Maria Madriaga[1]; Rimel Aggabao[1], Giezel Diaz-Candido[1]; James Maningo[1]; Victor Tseng*[1,5]

Author Affiliations:

[1]AnsibleHealth, Inc (Mountain View, CA)

[2]Department of Anesthesiology, Massachusetts General Hospital, Harvard School of Medicine (Boston, MA)

[3]Warren Alpert Medical School; Brown University (Providence, RI)

[4]OpenAI, Inc; (San Francisco, CA)

[5]Department of Medical Education, UWorld, LLC (Dallas, TX)

**Indicates corresponding author*

Corresponding Author Information:

Victor Tseng, MD

Inteligencia artificial

ChatGPT-3

Editorials

nature

seeing no external submissions to an open database on water purification that was created more than one year ago[4].

The delegates assembling in New York need to accept that their countries' visions will not be realized until all nations can somehow carve out a path to cooperate amid tension and conflict. Research can help to provide at least some of the right language, which is why it needs to be taken on board when decisions are being made. We in the Nature Portfolio intend to play our fullest part to make that happen.

1. *Nature Water* **1**, 1 (2023).
2. Michalak, A. M. *et al. Nature Water* **1**, 10–18 (2023).
3. Xu, R. *et al. Nature Water* **1**, 113–122 (2023).
4. Verbeke, R. *Nature Water* **1**, 7–9 (2023).

Tools such as ChatGPT threaten transparent science; here are our ground rules for their use

As researchers dive into the brave new world of advanced AI chatbots, publishers need to acknowledge the tools' legitimate uses and lay down clear guidelines to avoid abuse.

> "No LLM tool will be accepted as a credited author on a research paper."

spam, ransomware and other malicious outputs easier to produce. Although OpenAI has tried to put guard rails on what the chatbot will do, users are already finding ways around them.

The big worry in the research community is that students and scientists could deceitfully pass off LLM-written text as their own, or use LLMs in a simplistic fashion (such as to conduct an incomplete literature review) and produce work that is unreliable. Several preprints and published articles have already credited ChatGPT with formal authorship.

That's why it is high time researchers and publishers laid down ground rules about using LLMs ethically. *Nature*, along with all Springer Nature journals, has formulated the following two principles, which have been added to our existing guide to authors (see go.nature.com/3j1jxsw). As *Nature*'s news team has reported, other scientific publishers are likely to adopt a similar stance (see page 620).

First, no LLM tool will be accepted as a credited author on a research paper. That is because any attribution of authorship carries with it accountability for the work, and AI tools cannot take such responsibility.

Second, researchers using LLM tools should document this use in the methods or acknowledgements sections. If a paper does not include these sections, the introduction or another appropriate section can be used to document the use of the LLM.

Pattern recognition

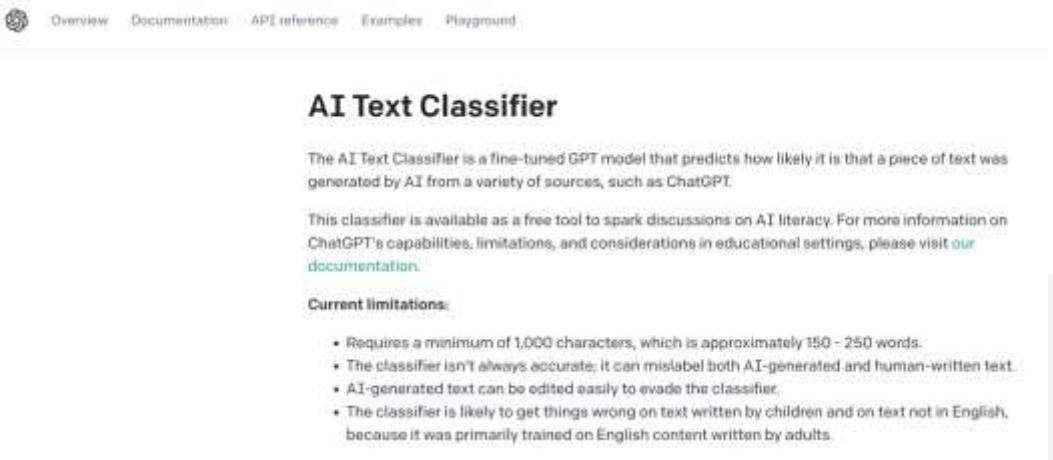
Can editors and publishers detect text generated by LLMs? Right now, the answer is 'perhaps'. ChatGPT's raw output is detectable on careful inspection, particularly when more than a few paragraphs are involved and the subject relates to scientific work. This is because LLMs produce patterns of words based on statistical associations in their training data and the prompts that they see, meaning that their

Inteligencia artificial

ChatGPT-3

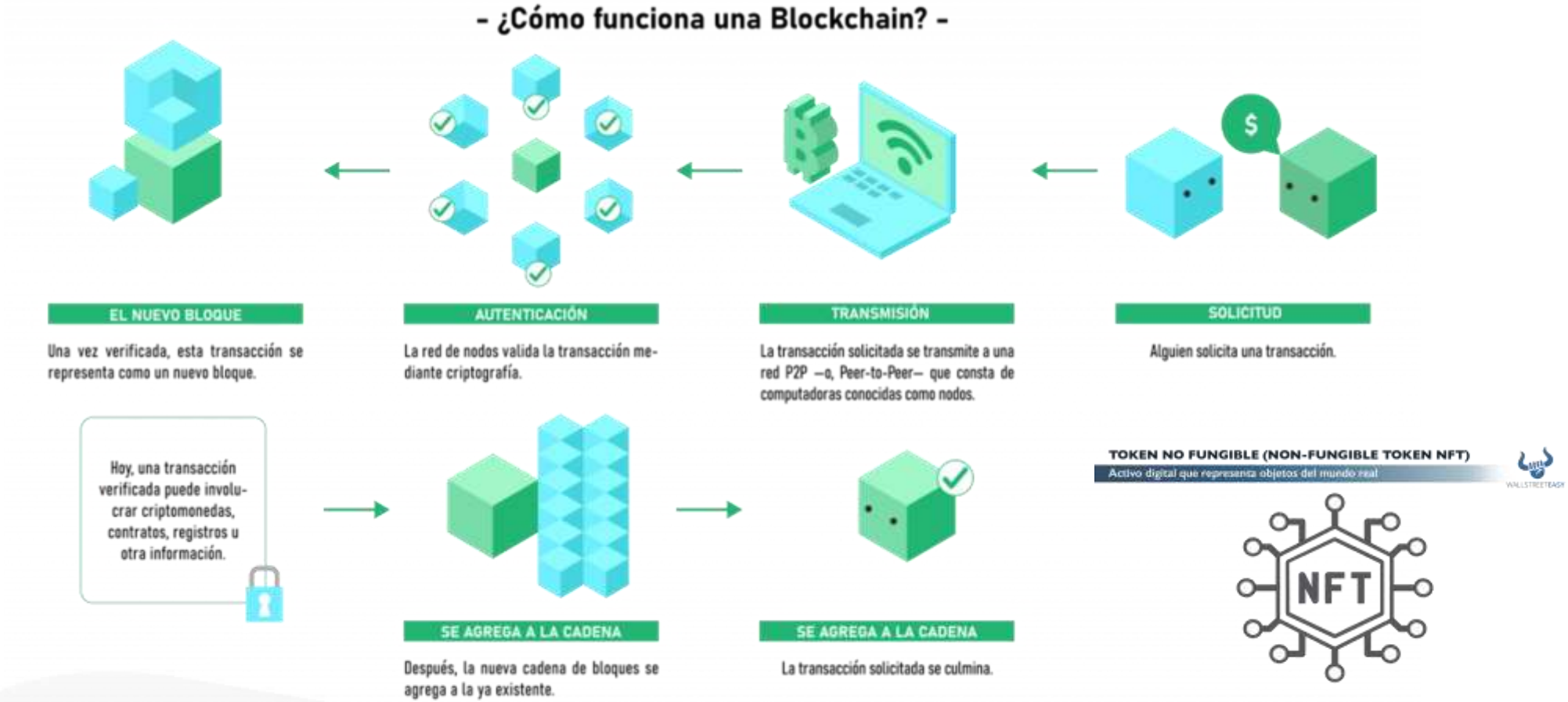
https://detectgpt.com/

https://gptzero.me/



https://platform.openai.com/ai-text-classifier

Blockchain / Non Fungible Tokens



Grech, A., & Camilleri, A, F. (2017). Blockchain in Education (A. Inamorato dos Santos (ed.)). Publications Office of the European Union. https://doi.org/doi:10.2760/60649

Gemelos digitales

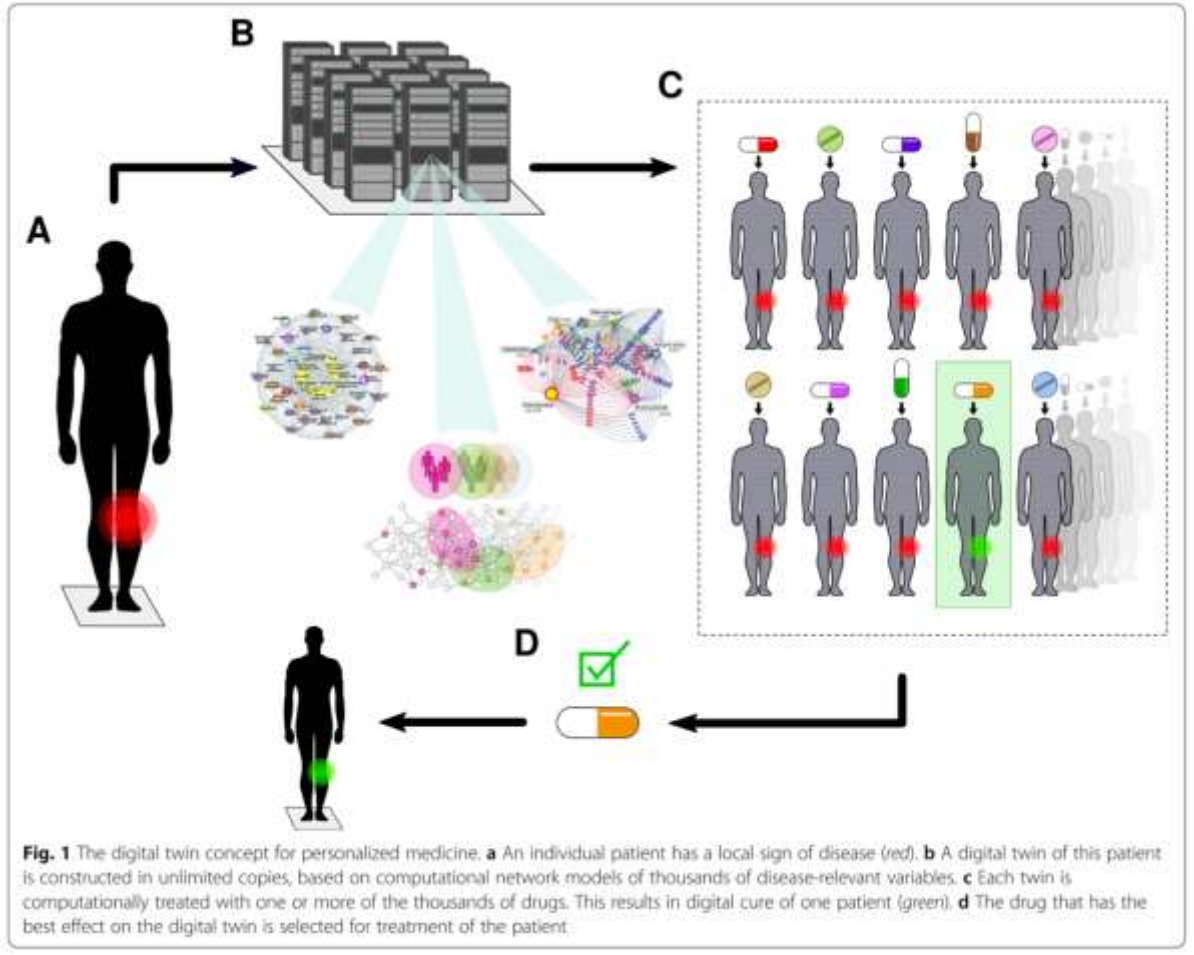
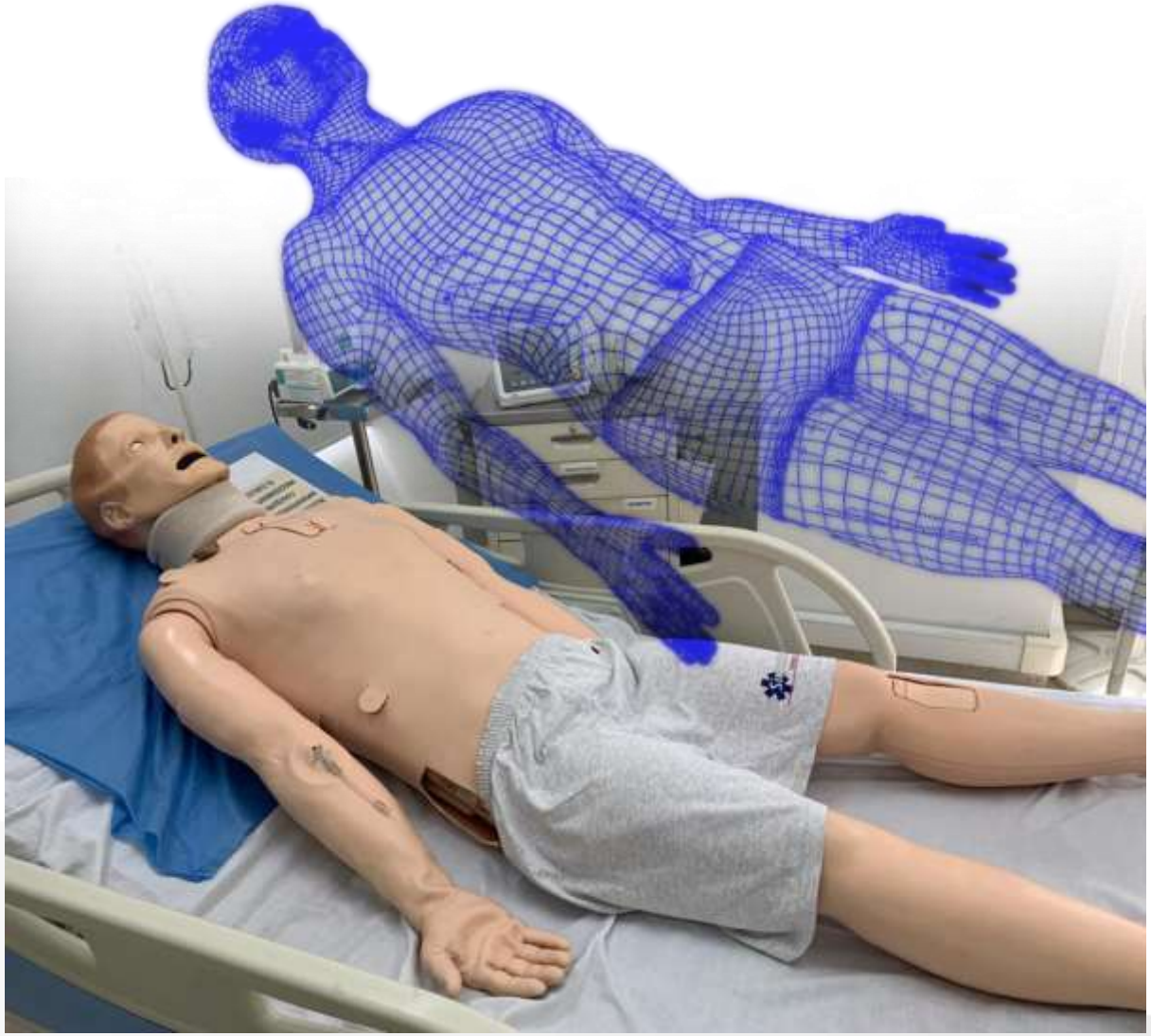


Fig. 1 The digital twin concept for personalized medicine. **a** An individual patient has a local sign of disease (*red*). **b** A digital twin of this patient is constructed in unlimited copies, based on computational network models of thousands of disease-relevant variables. **c** Each twin is computationally treated with one or more of the thousands of drugs. This results in digital cure of one patient (*green*). **d** The drug that has the best effect on the digital twin is selected for treatment of the patient

Far, S. B., & Rad, A. I. (2022). Applying Digital Twins in Metaverse : User Interface , Security and Privacy Challenges. Journal of Metaverse, 2(1), 8–15.
Björnsson B, Borrebaeck C, Elander N, Gasslander T, Gawel DR, Gustafsson M, et al. Digital twins to personalize medicine. Genome Med. 2019;12(1).

Gemelos digitales



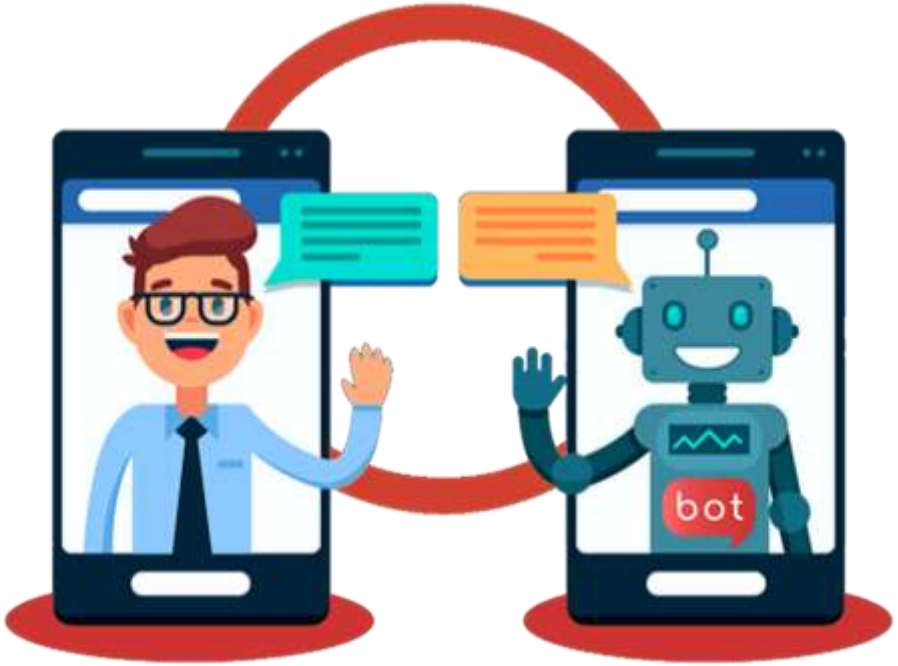
Big Data “Learning analytics”

Aprendizaje personalizado

Lavoué, E., Serna, A., Hernández-Leo, D., Verbert, K., & Abeele, V. (2021). When Gamification meets Learning Analytics. 198–201

Bots y educación

ChatGPT-3



"No me está permitido intervenir en discusiones teológicas"

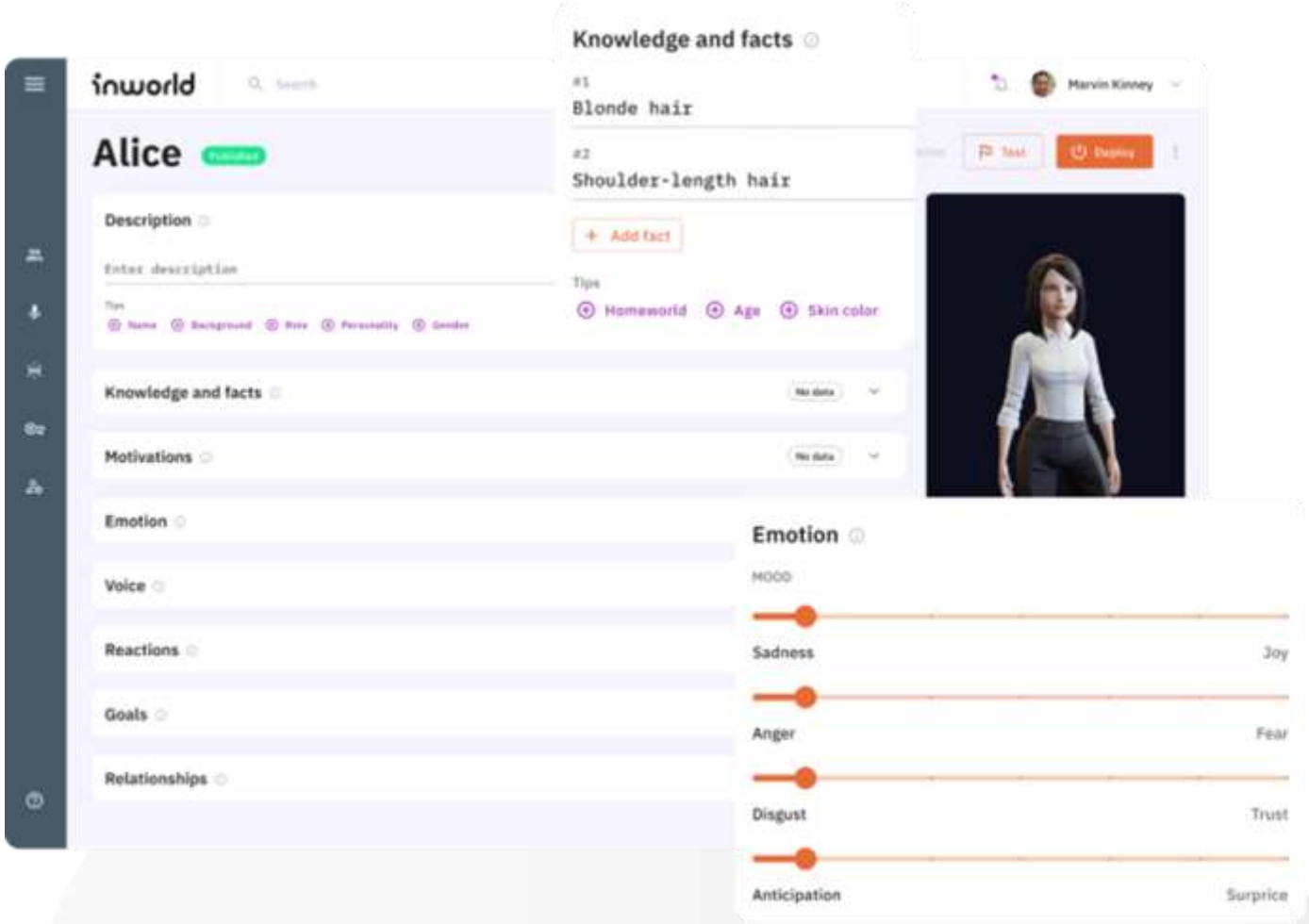
"Haz lo que desees"

Siri

Winkler, R., & Soellner, M. (2018). Unleashing the Potential of Chatbots in Education: A State-Of-The-Art Analysis. Academy of Management Proceedings, 2018(1), 15903. https://doi.org/10.5465/ambpp.2018.15903abstract

Avatar / Carácter

Inworld AI



Kurzweil, R. (2005). The singularity is near: When humans transcend biology. New York: Viking.

Teorías de aprendizaje

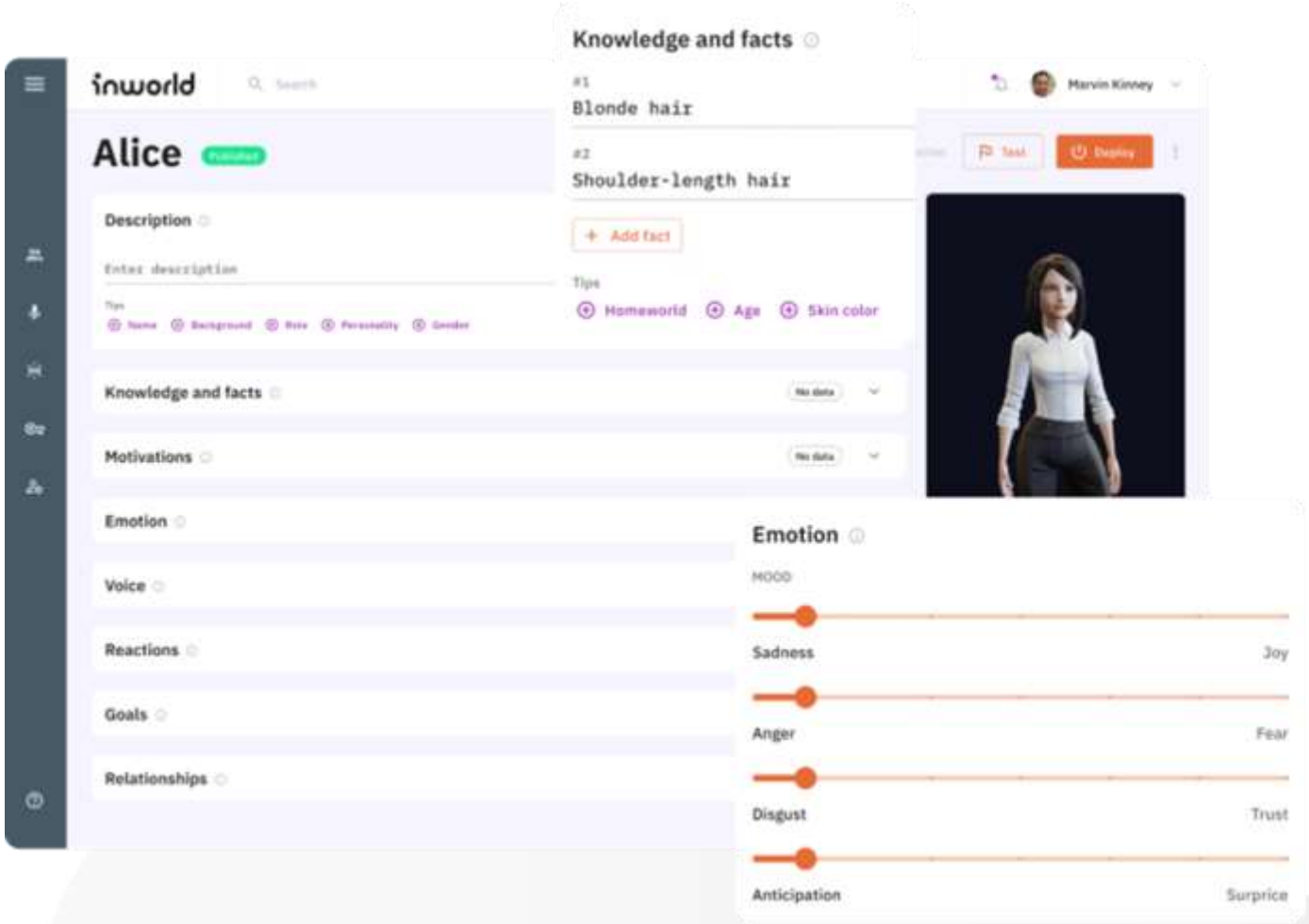
Babin, M. J., Rivière, & Chiniara, G. (2019). Theory for practice: Learning theories for simulation. In Clinical Simulation: Education, Operations and Engineering (pp. 97–114). Elsevier. https://doi.org/10.1016/B978-0-12-815657-5.00008-5

Juegos serios y gamificación

Almeida, F., & Simoes, J. (2019). The Role of Serious Games, Gamification and Industry 4.0 Tools in the Education 4.0 Paradigm. Contemporary Educational Technology, 10(2), 120–136. https://doi.org/10.30935/cet.554469

Avatar / Carácter

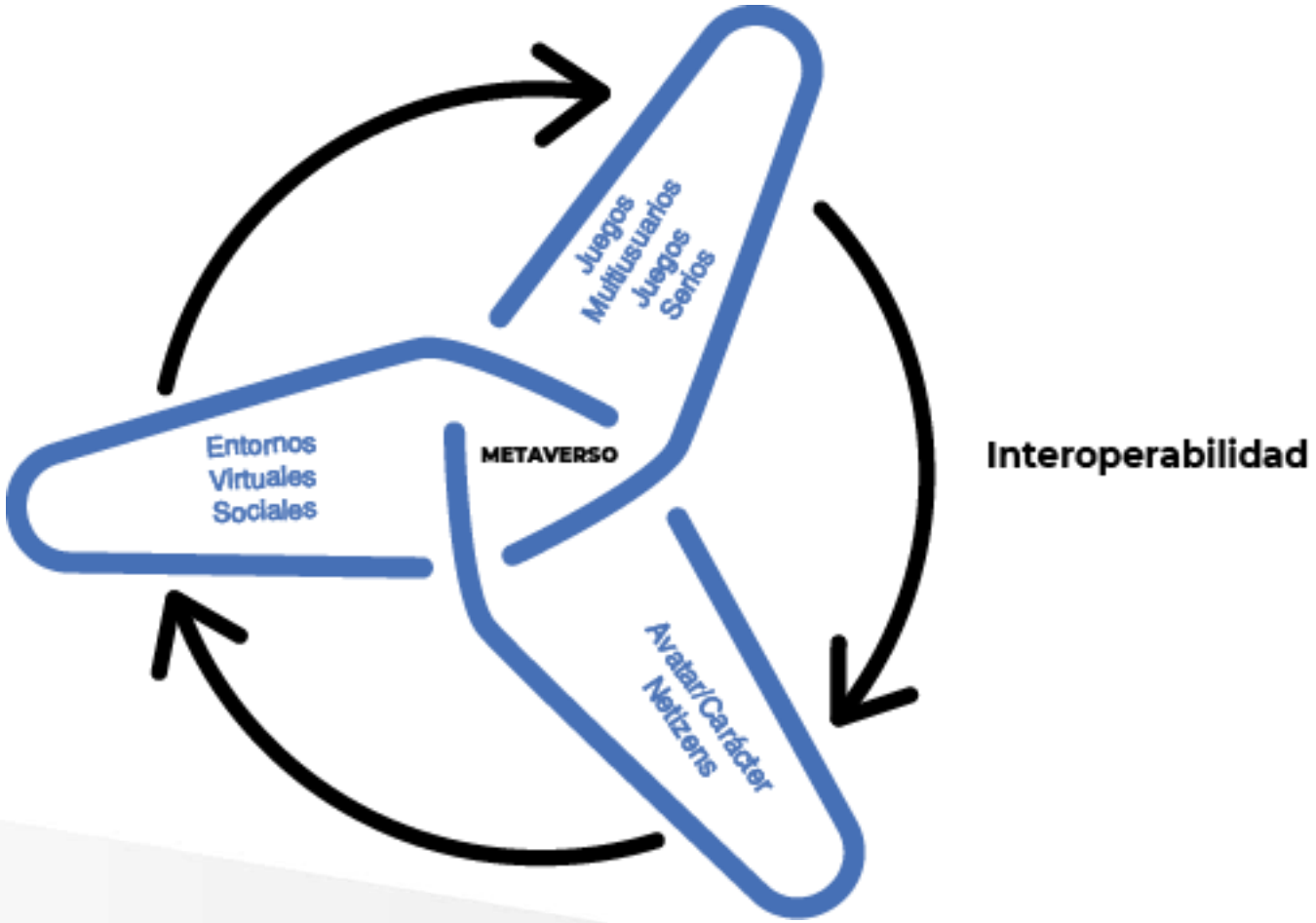
Inworld AI



Kurzweil, R. (2005). The singularity is near: When humans transcend biology. New York: Viking.

Avatar / Carácter

Inworld AI



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Aplicación práctica

Videoconferencia

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La Ética del Metaverso

¡Gracias!

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