

# Virtual Worlds initiative (and beyond)

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# CONNECT G.2 – Interactive Technologies, Digital for Culture and Education



## Transforming digital experiences with XR and virtual worlds

- Encouraging applications across **sectors**
- Supporting wider **adoption**
- R&I meeting European **values**

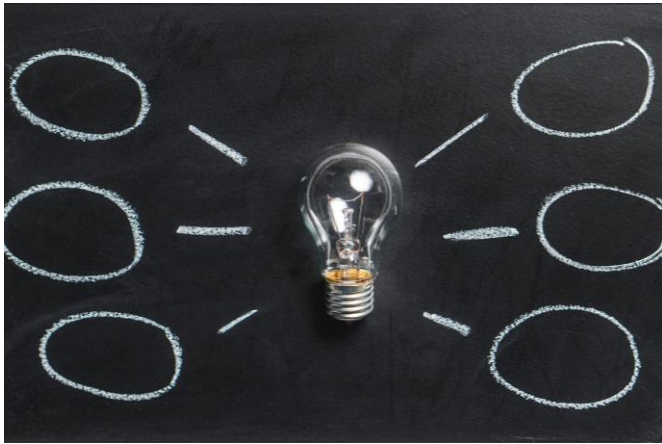
## Sectoral Data spaces

- **DS for Cultural Heritage** : bringing European CH into the digital age through advanced technologies, building on Europeana
- **DS for Media** : enabling media organisations to cooperate by sharing and accessing data
- **DS for Tourism** : preparatory action for data-driven tourism

## Education and skills fit for the Digital Decade

- Fostering **European excellence** in education & advanced digital skills
- **Data** for skills ( Data Space for Skills, Digital skills & Jobs Platform)

# Interactive Technologies, eXtended Reality, Virtual Worlds and Metaverse(s)



## POLICY

- Initiative on Virtual Worlds (2023 EC WP)
- Studies (health and education, zero-distance applications and services)



## RESEARCH, INNOVATION & DEPLOYMENT

- R&D
- Deployment :
- Cross-cutting aspects: ethics, interoperability, socio-economic impact



## COORDINATION – COOPERATION

- Building a European ecosystem
- AR/VR Coalition
- Links with other domains (AI, 5G/6G, cloud, digital twins, blockchain, etc.)



# Virtual worlds – opportunities



Learning



Surgery



Leisure



Cultural heritage



Maintenance



Multimodal interaction



Design - Construction



Entertainment/  
video games

# The Virtual Worlds / metaverses at EU political level

## September 2022

***“We will continue looking at new digital opportunities and trends, such as the metaverse”***

Key initiative for 2023: Initiative on virtual worlds, such as metaverse

→ President von der Leyen’s State of the Union [letter of intent](#)

“Metaverse — a new form of virtual space — is springing everywhere”

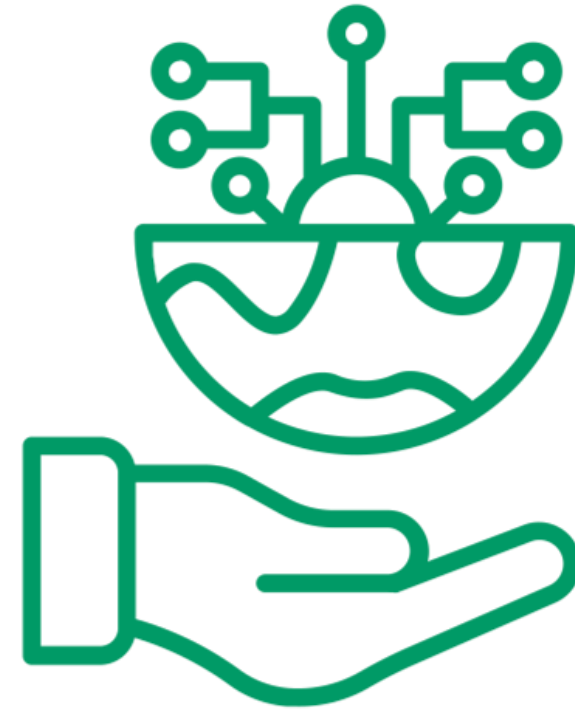
***“Our European way to foster the virtual worlds is threefold: people, technologies and infrastructure”***

→ Commissioner Breton blog

[People, technologies & infrastructure – Europe’s plan to thrive in the metaverse](#)

# Upcoming initiative on virtual worlds

- Non-legislative initiative, innovation oriented, long-term future outlook
- Consultations:
  - **With civil society**
    - Safer Internet Day
    - **Next generation of the Citizens' Panel**
    - Code Week
  - **With industry, academia, associations**
    - Targeted sectorial workshops
    - VR/AR Industrial Coalition
  - **Call for evidence**



## Technologies

Mainstream metaverse will require **1000x** increase in **computational efficiency**

[Intel](#)

1 metaverse user session:  
up to **40x more data**  
than streaming an HD video

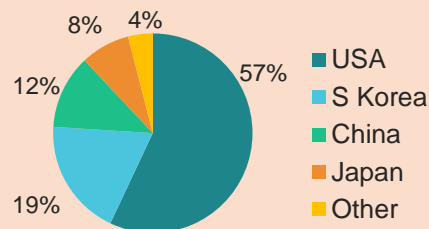
[Arthur D. Little](#)

Since 2016

> **7500 patents\***  
filed worldwide

[Nikkei](#)

\*20 categories incl. VR/AR, communications, sensors and displays



## Markets and jobs

Global metaverse **market size**  
from **€27bn** in 2022 to **€800bn** by 2030  
[Bloomberg](#)

Global metaverse market for **automotive**  
from **€1.9bn** in 2022 to **€16.5bn** by 2030  
[Globalnewswire](#)

From Feb 2021 to Apr 2022  
**€8bn** in **mergers & acquisitions**  
Mainly US (Microsoft, Unity...) + China (ByteDance)  
[GlobalData](#)

Up to **860000** new **XR jobs**  
In Europe by 2025  
[Ecorys](#)

# Building a thriving ecosystem in the EU

## Strengths

- **Content** and **culture** rich continent
- **Key players** in some core metaverse technologies
  - EU industry leaders in fields such as 3D, optics, industrial metaverses, etc.
  - High-end SMEs
- Strong **gaming** industry
- Excellence in **related interoperability frameworks** (e.g., digital payments)
- Future-oriented **legislation**

ISFE

## Weaknesses

- Lack of **big EU players** (e.g. platforms and related innovation ecosystems)
- **Fragmentation** of the European industry
- Problems for start-ups to **scale up** and risk of killer acquisitions
- Lack of **awareness** and **understanding of potential benefits**
- **Skills** shortage
- Lack of **investment capacity**



# European Citizens' Panel on Virtual Worlds

## Final recommendations

### Values and principles for desirable and fair European Virtual Worlds

1. Freedom of choice
2. Sustainability
3. Human centered
4. Health
5. Education & literacy
6. Safety & security
7. Transparency
8. Inclusion

### 23 recommendations

### Topics

- Work and job markets
- Supporting innovation & development
- Public / private: rating and registration
- Data use and protection
- Central agency + police
- Learning and education
- Environmental and climate sustainability
- Health impact + research agenda
- Information sharing and awareness
- Digital identity
- Connectivity and access
- International cooperation and standards

# What are we looking at?

## WEB 2.0 centralised



Mainly 2D worlds, basic immersion, enabled by traditional input/output interfaces. Marketing/branding.

## WEB 3.0 decentralised

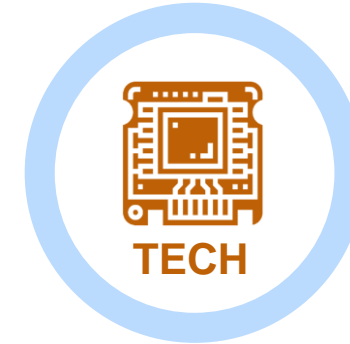


3D web, generalised use of Digital Twins, enhanced user interfaces, mainstream XR devices.

## WEB 4.0 distributed



Seamless blending of real and virtual worlds, enabled by natural user interfaces, real-time sensor data, generalised AI, ubiquitous computing and distributed control.



- Shifting from the 2D world to the **next disruptive and transformative** frontier where people and businesses thrive in both **the real and virtual worlds**.
- We want virtual worlds:
  - that reflect **EU values** and respect **EU legislation**;
  - where people are safe, confident and empowered;
  - that are open and interoperable;
  - that promote growth and development of industry.

# The Virtual and Augmented Reality Industrial Coalition

- **Status**

- 15/09/2022 : Official Launch of the VR/AR Industrial Coalition by Commissioner Breton
- Strategic paper
- First endorsements
- Governance – under definition

- **Upcoming**

- Meetings with the VR/AR Industrial Coalition to take stock of roadmap and challenges/opportunities faced by the VR/AR ecosystem

A platform for structured dialogue between the European VR/AR ecosystem and policymakers



<https://digital-strategy.ec.europa.eu/en/policies/virtual-and-augmented-reality-coalition>

# XR4HUMAN: equitable, inclusive and human-centered XR



## Goals

- guidance on **ethical** and related **policy, regulatory, governance,** and **interoperability** issues of XR technologies within a European community of practice
- to build a strong and **competitive ecosystem** around XR for the European industry, but in a manner that creates **trust** among users and authorities

From 1 Nov 2022 to 31 Oct 2025 / 2.5M€

Coordinated by University of South-Eastern Norway

## Main deliverables

- **Interoperability guidelines** for EU companies and authorities
- European **Code of Conduct** for equitable, inclusive, and human-centred XR
- **Online repository of test cases** to allow developers to demonstrate evidence of adherence to best practices
- **Ranking system** and **teaching materials** to help consumers select XR solutions/products
- A digital **European Forum** to facilitate stakeholder dialogue on issues of ethics and interoperability

<https://xr4human.eu/>



# EDITH – Ecosystem for Digital Twins in Healthcare



- Monitor disease risk, enable earlier prognosis, diagnosis, intervention
- Visualise behavioural effects in the human body *Diet, Exercise, Tobacco*

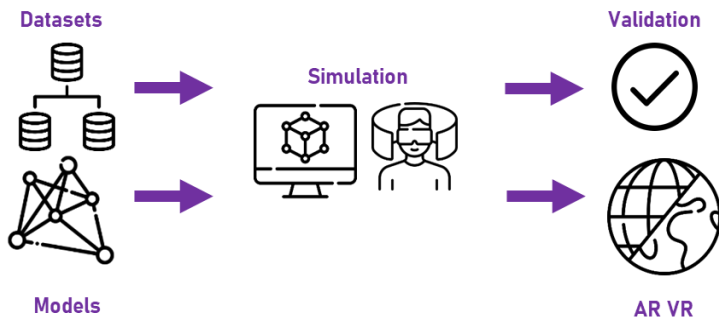
**For: Citizens, Clinicians, Researchers**

- Personalise care for difficult to treat diseases, e.g. cancer, neurodegenerative, cardiovascular diseases
- Use in medical training, intervention planning, medicines & medical device development

**For: Patients, Carers, Clinicians, Researchers, Regulators**

- Visualise progression, return to the healthy state
- Monitor remission, recurrence risk
- Use of patient-specific 'digital models' for long term care

**For: Patients, Carers, Clinicians, Researchers, Regulators**





HORIZON-CL4-2021-  
HUMAN-01-06

New immersive and  
innovative products for  
media



<b>EMIL</b>	<b>European Media and Immersion Lab</b>	<a href="https://emil-xr.eu/">https://emil-xr.eu/</a>
<b>MAX-R</b>	Mixed Augmented and eXtended Reality media pipeline	<a href="https://www.upf.edu/web/max-r">https://www.upf.edu/web/max-r</a>
<b>TransMIXR</b>	Ignite the Immersive Media Sector by Enabling New Narrative Visions	<a href="https://transmixr.eu/">https://transmixr.eu/</a>
<b>XRECO</b>	XR mEdia eCOsystem	<a href="https://xreco.org/">https://xreco.org/</a>

# Digital Europe Programme WP23-24

## 2.3.2 Developing CitiVerse

projects, led by the industry in cooperation with one or more communities, will introduce VR/AR and metaverse technology to allow citizens and other stakeholders to «navigate and interact» in their urban spaces from basic 'default' sensory experiences all the way to digital asset-enhanced AR overlays merging the physical and virtual communities into a hybrid metropolis

Closing 26/09

Topic ID: DIGITAL-2023-CLOUD-AI-04-DEVELOPCITI

## Next steps

**Virtual Worlds initiative – planned for 11/07/2023**

**Virtual worlds (metaverses) –a vision for openness, safety and respect**

[https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13757-Virtual-worlds-metaverses-a-vision-for-openness-safety-and-respect\\_en](https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13757-Virtual-worlds-metaverses-a-vision-for-openness-safety-and-respect_en)

# Thank you



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