VOTE CARD

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DIGITAL EXTENDED REALITY

This technology family includes innovations which extend the reality through digital means.

It changes how people connect with each other, how they interact with their surroundings and creates intuitive interactions with virtual realities.


SOCIAL FACTORS

DATA CONTROL

SOCIAL DISCONNECTION

INEQUALITY


SOCIAL FACTORS

DATA CONTROL

SOCIAL DISCONNECTION

INEQUALITY

SOCIAL FACTORS

DATA CONTROL

SOCIAL DISCONNECTION

INEQUALITY

COUNCIL RESPONSE CARD

TECH AGE CARD ID:

ISSUE TO SOLVE:

ETHICS PROPOSITION:

COUNCIL RESPONSE CARD

TECH AGE CARD ID:

ISSUE TO SOLVE:

ETHICS PROPOSITION:

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ETHICS PROPOSITION:

COUNCIL RESPONSE CARD

TECH AGE CARD ID:

ISSUE TO SOLVE:

ETHICS PROPOSITION:

TECH FAMILY

VOTE CARD

VOTE CARD

WORLD CARD

HARD

WORLD CARD

EASY

WORLD CARD

NORMAL

COUNCIL RESPONSE CARD

COUNCIL RESPONSE CARD

COUNCIL RESPONSE CARD

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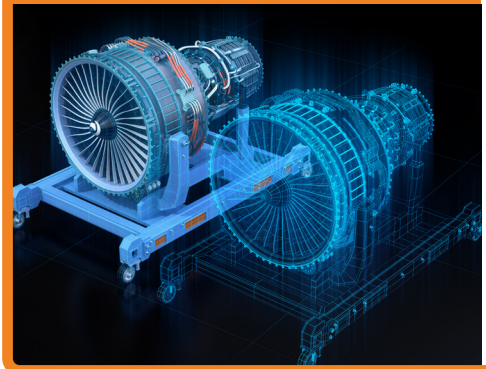
VIRTUAL REALITY

Virtual reality creates digitally simulated experience. Virtual reality environments are built by combining digital graphics and inputs to other senses.

METAVERSE

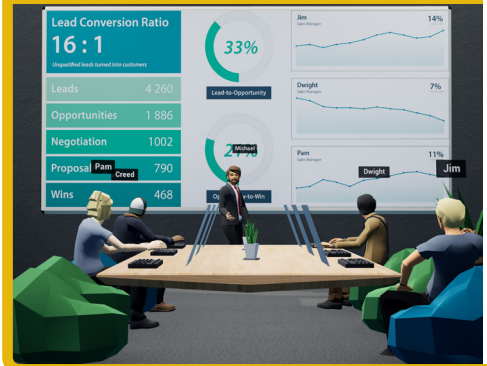
A metaverse is a virtual environment where many people can interact, often with the help of digital avatars that can be customised. In these virtual spaces, people might be able to buy, sell and even own things.

DIGITAL TWINS



Digital twins are replicas of real objects, but in a digital space. They can be used to simulate, monitor, and improve the way their physical originals work. Engineers, doctors and aviators train with digital twins to better understand the systems they work with.

REMOTE WORK



Co-workers can interact without being in the same location. Team meetings can be held in virtual and mixed realities with physical and avatar participants.

BENEFIT

People move away from the city and live closer to nature

ETHICAL CHALLENGE

Keeping a balance between work and life

RELATIONSHIPS

Conveying facial expressions, vocal intonation, and speech-gesture coordination creates more intimate communication, reshaping long-distance relationships.

BENEFIT

People maintain constant attachment despite distance

ETHICAL CHALLENGE

Mismatch between avatar and person behind

CONSERVATION

Duplicating the real world helps us to preserve art, locations, and built worlds in their original forms.

BENEFIT

Regardless of what the future holds, art can be viewed in its original form

ETHICAL CHALLENGE

Abandoning authenticity

HEALTH

XR is used for many therapeutic purposes. For example, exposure therapy can help alleviate phobias, anxiety, or post-traumatic stress disorder.

BENEFITS

Patients can face their fears in a safe environment

ETHICAL CHALLENGE

Confusing realities

GAMING

XR enhances the feeling of being present in a game. The first-person perspective allows players to feel like the main character of their adventure.

BENEFIT

More appealing and even more relaxing games

ETHICAL CHALLENGE

Immersive games can be more addictive

COUNCIL RESPONSE CARD

COUNCIL RESPONSE CARD

COUNCIL RESPONSE CARD

TECH AGE 1

XR - I - 2

TECH AGE 1

XR - I - 1

COUNCIL RESPONSE CARD

METAVERSE

TECH AGE 2

XR - II - 2


VIRTUAL REALITY

TECH AGE 2

XR - II - 1

TECH AGE 1

XR - I - 3

METAVERSE
VIRTUAL REALITY

TECH AGE 2

XR - II - 5

METAVERSE
VIRTUAL REALITY

TECH AGE 2

XR - II - 4


DIGITAL TWINS

TECH AGE 2

XR - II - 3

TRAINING

XR applications are used to train different skills. This is especially helpful for high-risk or expensive training, like in medicine and aviation.

BENEFIT

Earning certificates more quickly and with greater flexibility

ETHICAL CHALLENGE

Transfering skills from XR to the material world

TOURISM

People can tour faraway places without leaving the convenience of their home. With the push of a button, they can visit other cities or wild places, like a mountain peak.

BENEFITS
Fewer income barriers to cultural exchange and travel

ETHICAL CHALLENGE
Increase in sedentary lifestyles

SOCIAL NETWORKING

The metaverse can be used as a new medium for social interactions. The internet opens doors to meet and interact in a social virtual reality.

BENEFITS

Keeping in touch with friends and family far from home

ETHICAL CHALLENGE

Harassement and abuse are difficult to tackle

SECOND WORLD

A digital world could give people the chance to explore new identities or treat each other with greater equality.

BENEFITS
A chance to overcome pre-existing inequalities

ETHICAL CHALLENGE
Abandoning the real world

How can we ensure fair working and economic conditions in the digital world?

New ways to make money in the digital world will emerge, like trading in goods and services, or even getting a job. However, the labour market and the economy in virtual realities may not be regulated in the same way as the material world.

WORKING CONDITIONS

How can we ensure that XR is not exploited for malicious purposes?

These technologies can be used for a purpose that differs from their intended one. Deepfakes, or avatars that may be indistinguishable from the avatars of real persons, can be exploited to manipulate, damage people's reputations, or influence society illegitimately.

DUAL USE AND MISUSE

How can the environmental impact of XR applications be contained?

Producing XR devices and infrastructures requires significant amounts of raw materials. Oil and gas reserves might be used to power them. The supply and use of these scarce resources causes damage to the environment and people.

ENVIRONMENTAL IMPACT

How do we deal with the privacy concerns raised by XR?

XR devices can collect sensitive data about people's bodies, emotional reactions, and social interactions, such as eye tracking and heart rate measurements. They can also pick up data from the physical surroundings of the users' personal or work space.

PRIVACY

Should nudging be controlled in XR?

In XR, strong immersion in a virtual environment can lead to more effective manipulation of users' behavior. Collection of data that users might remain unaware of, such as eye movement, temperature and heart rate, can be used to attract their attention and ultimately impact their ability to focus.

MANIPULATION

How can we ensure that XR developments are socially just?

XR often relies on high-cost devices developed based on the experiences of able-bodied people. This creates discrimination and social exclusion for those who can't afford the technology, who can't use it due to bodily constraints, or who do not have access to it due to economic inequalities.

DISCRIMINATION

Should there be limits for immersion?

Users are not always given clear and transparent information on the nature of the environment in which they engage when they use XR applications: for example, which aspects they perceive are material and which are digital in nature, or when they enter and leave a virtual session.

TRANSPARENCY

Should avatars simulate the presence of real people, including those who have died?

XR technologies make it possible to simulate the presence of deceased people by using data collected when they were still alive. Deepfake technologies can also be used to create avatars that are indistinguishable from the deceased.

DIGNITY

METAVERSE
DIGITAL TWINS

TECH AGE 2

XR - II - 8

VIRTUAL REALITY
DIGITAL TWINS

TECH AGE 2

XR - II - 7


VIRTUAL REALITY
DIGITAL TWINS

TECH AGE 2

XR - II - 6

RELATIONSHIPS

TECH AGE 3

XR - III - 2

REMOTE WORK

TECH AGE 3

XR - III - 1


METAVERSE
DIGITAL TWINS

TECH AGE 2

XR - II - 9

GAMING

TECH AGE 3

XR - III - 5

HEALTH

TECH AGE 3

XR - III - 4

CONSERVATION

TECH AGE 3

XR - III - 3


SOCIAL NETWORKING

TECH AGE 3

XR - III - 8

TOURISM

TECH AGE 3

XR - III - 7

TRAINING

TECH AGE 3

XR - III - 6

How can virtual misconduct be prevented or managed?

While morally reprehensible acts happen virtually in virtual social environments, they can have significant moral and psychological effects on the people behind the avatars, causing real harm.

RESPONSIBILITY

REMOTE WORK	⛓	⚖
RELATIONSHIPS	⛓	⛓
CONSERVATION	📈	📈
HEALTH	⛓	📈
GAMING	⛓	⛓
TRAINING	⚖	⚖
TOURISM	📈	⚖
SOCIAL NETWORKING	📈	⚖
SECOND EARTH	⚖	⛓

DISCRIMINATION	📈	⛓
PRIVACY	📈	📈
WORKING CONDITIONS	⚖	⚖
RESPONSIBILITY	⛓	⚖
DIGNITY	📈	📈
MANIPULATION	📈	⚖
DUAL USE AND MISUSE	⛓	⛓
ENVIRONMENTAL REDUCTION	⚖	⚖
TRANSPARENCY	⛓	⛓

VIRTUAL REALITY

METAVERSE

DIGITAL TWINS

TURN SUMMARY

I. PLAYER ROUND

(1. TECHNOLOGY FAMILY)

2. TECH AGE EVOLUTION

3. OPEN DEBATE

4. CITIZEN WORLD COUNCIL DECISION

II. WORLD ROUND

1. IMPACTS

2. ETHICAL ISSUES

3. CITIZEN WOLRD COUNCIL RESPONSE

4. TECHNOLOGY TREE

5. END OF GAME?

CREDITS

THIS GAME WAS DEVELOPED BY THE EU-FUNDED PROJECT TECHETHOS, BASED ON NEW RESEARCH CARRIED OUT BY ITS PARTNERS.

FOR MORE INFORMATION, VISIT:
WWW.TECHETHOS.EU
OR MEET US ON SOCIAL MEDIA:

@TECHETHOSEU

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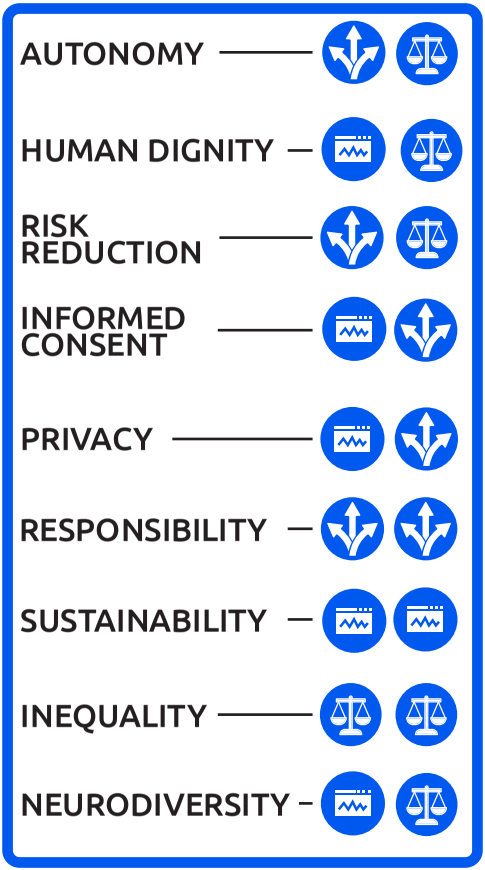

NEURO-STIMULATION

NEUROIMAGING

BRAIN-COMPUTER INTERFACE

TURN SUMMARY

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ETHICS PROPOSITION:

IMPACT CARD

AGE

3

IMPACT CARD

AGE

2

SECOND WORLD

TECH AGE 3

XR - III - 9

CREDITS

TURN CARD

IMPACT CARD

AGE

1

TURN CARD

IMPACT CARD

AGE

1

IMPACT CARD

AGE

3

COUNCIL RESPONSE CARD

COUNCIL RESPONSE CARD

CREDITS