TRANSMIXR

# DIVERSITY, EQUITY AND INCLUSION (DEI) REFLECTION TOOL

## FOR CREATORS, DEVELOPERS, AND USERS OF GENERATIVE AND IMMERSIVE TECHNOLOGIES

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The tool is design as **a questioning grid** to ensure the development of immersive and generative technologies leads to strengthened diversity, equity and inclusion in the **media, cultural and creative sectors.**

## Context

As the AI and XR sectors continue to grow globally, Europe has the potential to become one of the leading continents, with strong political and financial backing from the European Commission. At the recent Artificial Intelligence Action Summit in Paris, President Ursula von der Leyen emphasized the continent's ambition by announcing the InvestAI initiative, aimed at mobilizing €200 billion in AI investments. To support this program, the European AI Champions Initiative brings together companies and investors to foster European AI innovation and competitiveness.

Similarly, XR – encompassing VR, AR, and the broader concept of "Virtual Worlds"– is a strategic priority for Europe. The European Commission is actively supporting this sector through the Horizon Europe program, with over 80 XR-related projects currently active or soon to be. A Virtual World Partnership is also being developed to steer research and ensure that XR technologies evolve in line with European cultural values.

All sectors and industries are exposed to the progress and dissemination of those technologies and the way in which they will change uses, and the media, cultural and creative sectors are not excluded.

# Intention

As an **unchecked development of such tools in such industries can generate unwanted consequences** (mis-information, unchecked biases, increased environmental footprint…), being reflexive on the way they are used and implementing safeguards is key. Based on the firm belief that technological innovation should never be developed and generalised at the expense of the common good (i.e. respect for planetary boundaries and social justice), this document is a proactive action to push for **the systematic consideration of key values into technology development and use, focusing on Diversity, Equity and Inclusion principles.**

It was elaborated in the form of a r**eflection frame listing key questions** to make sure professionals in the development and applicative fields of those technologies consider how to make them accessible to all and promote values of Diversity, Equity and Inclusion.

# Targets

**This document is aimed at technology designers and developers and at the professional users of those technologies** wishing to ensure the tools they develop and use are as inclusive as possible.

As a questioning grid, the document does not provide readers with the theoretical bases to understand the topics of inequality, discrimination and inclusion at large, but rather **guides them through a reflexive thought process to cover all dimensions of the issues.** As such, the targeted audience is, preferably, already conscious of the necessity to integrate DEI principles and of the main stakes associated with the topic.

# Method and structure

The chosen method for this document consists in **formulating questions which all actors involved should ask themselves at various stages of the process of technology design, development, conception and use.** It does not aim at giving strict guidelines to follow, but rather to encourage a reflexive process of continuous questioning, ensuring DEI does not remain a blind spot of the development process.

The chosen structure refers to all the steps of technology development and use at which to consider inclusion and diversity stakes. We start with the user experience dimension ; section 1 encompasses all aspects needing to be considered to make the final experience as inclusive as possible, taking into account both the setbacks and advantages of AI, XR, and VR technologies. We then dive into more specific approaches, addressing separately actors involved in the conception, development and design of the tools (section 2) and professional users applying the tools to their sector (section 3). In each part, we adopt a comprehensive approach encompassing diversity, accessibility and the representations and narratives conveyed in the offered content.

# Glossary

***The terms marked with an asterisk (*) are defined below for clarity:***

## Accessibility

Accessibility refers to the design and provision of products, services, environments, and facilities that can be accessed and used by everyone, regardless of their age, ability, or status. It aims to eliminate barriers, ensuring equal access and participation for all individuals, including those with disabilities, limited mobility, or diverse backgrounds. Accessibility encompasses various aspects, including physical, digital, and communication accessibility.

## Digital Literacy

Within a population, the disparity between individuals with access to information and communication technologies (ICT), who are able to make use of services offered on the Web, and those without.

## Discrimination

Discrimination is “any unfair treatment or arbitrary distinction based on a person’s race, sex, gender, sexual orientation, gender identity, gender expression, religion, nationality, ethnic origin, disability, age, language, social origin or other similar shared characteristic or trait”. Discrimination is considered prohibited conduct and “may be an isolated event affecting one person or a group of persons similarly situated or may manifest itself through harassment or abuse of authority”.

## Diversity

A group that is diverse from a variety of perspectives: equitable geographical distribution, gender balance, cultural, generational and multilingual perspectives, disabilities).

## Ethnicity

A social construct that divides people into smaller social groups based on characteristics such as a shared sense of group membership, values, behavioral patterns, language, political and economic interests, history, and ancestral geographical base.

## Gender

The socially constructed roles, behaviours, activities and attributes that a given society considers appropriate for individuals based on the sex they were assigned at birth. These attributes, opportunities and relationships are socially constructed and are learned through socialization processes. They are context/ time-specific and changeable. Gender determines what is expected, allowed and valued for an individual in a given context. [...] Gender is part of the broader socio-cultural context, as are other important criteria for socio-cultural analysis including class, race, poverty level, ethnic group, sexual orientation, age, etc.

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To consult the UN's definitions related to Diversity, Equity and Inclusion, visit: UNICEF Glossary

# Glossary

***The terms marked with an asterisk (*) are defined below for clarity:***

## Gender Diversity

The equitable representation of people of different genders, including cisgender and transgender men and women, other transgender people, non-binary people, and other people with diverse gender identities.

## Inclusion

Inclusion refers to the practice of intentional, ongoing efforts to ensure everyone, regardless of background, identity, ability and experience feel welcomed, valued, listened to, respected, supported and encouraged to fully participate in all aspects of organisational life and are involved in pertinent decision making processes.

## Low-Income Population

Low-income populations refer to groups of individuals or families that have limited financial resources, often defined by their income levels being significantly below the median income in a given area. These populations face various challenges related to access to essential services, including education, healthcare, and technology, which are critical in navigating the digital landscape.

## Minority

A non-dominant group which is usually numerically less than the majority population of a State or region regarding their ethnic, religious or linguistic characteristics and who (if only implicitly) maintain solidarity with their own culture, traditions, religion or language.

## Stereotypes

A generalized view or preconception about attributes or characteristics that are or ought to be possessed by members of a particular social group or the roles that are or should be performed by members of that group. Stereotypes can easily lead to discrimination.

## Neurodiversity

Neurodiversity describes the idea that people experience and interact with the world around them in many different ways; there is no one "right" way of thinking, learning, and behaving, and differences are not viewed as deficits. The word neurodiversity refers to the diversity of all people, but it is often used in the context of autism spectrum disorder (ASD), as well as other neurological or developmental conditions such as ADHD or learning disabilities.

**To consult the UN's definitions related to Diversity, Equity and Inclusion, visit: UNICEF Glossary**

# Summary

# Introduction

# What are immersive and generative technologies?

## Immersive Technologies

**Extended reality (XR)** is an emerging umbrella term for all immersive technologies, including virtual reality, augmented reality, and mixed reality.

- **Virtual reality (VR)** is a technology that creates a digitally simulated immersive environment or experience for users. It typically involves the use of specialised hardware and software to create a computer-generated 3D spatial, and possibly multi-sensorial, environment that can be interacted with in a seemingly real or physical way. VR allows users to experience and interact with a digital environment as though it were real.

- **Augmented reality (AR)** on the other hand is a technology that overlays digital information, such as text; images; sound; videos; or 3D models, onto the real-world environment. AR enhances the real world by adding computer-generated elements to it.

- **Mixed reality (MR)** systems are immersive technologies that bring physical objects into digital environments or digital objects into physical reality. One type of MR is Cinematic Reality, offering immersive 360 degrees viewing with live camera footage.

XR technologies typically rely on smartphones, tablets, smart glasses, or other wearable devices to deliver the augmented and/or virtual experiences. The wearables are also required to collect certain basic information provided by the user as a starting point, and then a continuous stream of new feedback data generated as the user interacts with their virtual environments to create the illusion of interaction with the virtual elements *1.

### Insight from one of TRANSMIXR partners:

***"The use of augmented reality enables better understanding and authenticity in the dissemination of news and cultural content; it can be placed as a tool against disinformation. There is a desire to offer interactive and freely explorable experiences to enrich the reception of information."***

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*1 Extended reality. (2025, April 7). European Data Protection Supervisor.

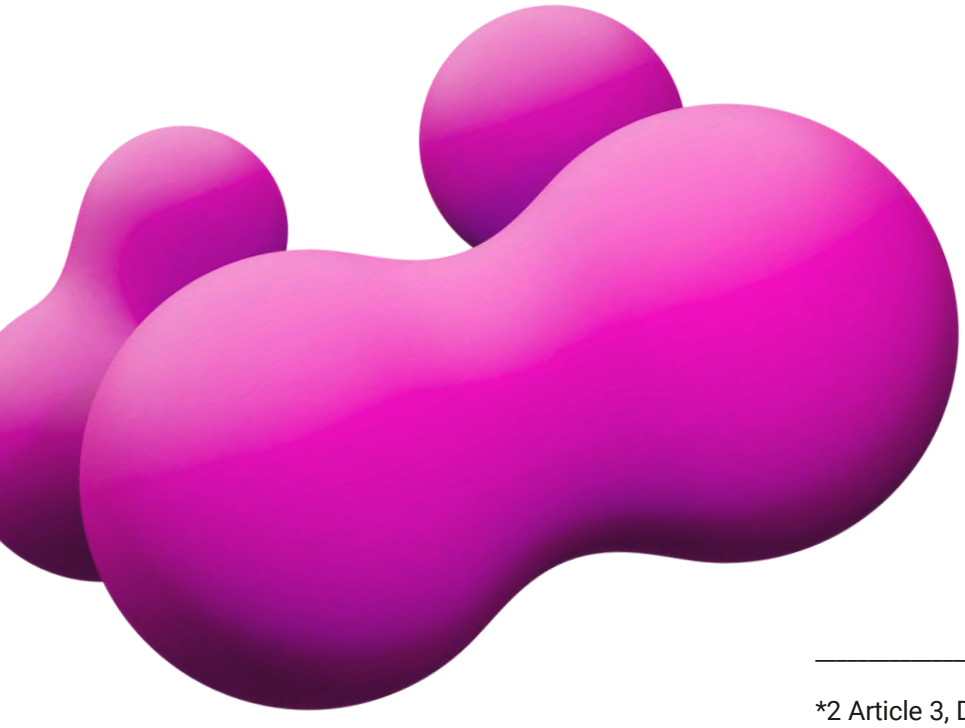
# Introduction

# What are immersive and generative technologies?

## Generative Technologies

An **Artificial Intelligence (AI) system** refers to a machine-based system that is designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment, and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments *2.

**Generative Artificial Intelligence** is a category of AI focused on the autonomous creation of data, content, or artistic works. Unlike traditional AI, which is typically designed for specific tasks like classification, prediction, or problem-solving, generative AI aims to produce new data that closely resembles content created by humans—whether in the form of text, images, music, or even 3D models. Generative AI relies on machine learning models to create content independently.



*2 Article 3, Definitions | EU Artificial Intelligence Act. (s. d.).

# TRANSMIXR: A European-funded Project on XR and AI

The future of media experiences, and of the Creative and Cultural Sector (CCS) poses a series of thrilling challenges, and the maturity of eXtended Reality (XR) and Artificial Intelligence (AI) technologies provides a unique window of opportunity to reimagine digital co-creation, interaction and engagement possibilities.

**TRANSMIXR is at the forefront of this transformation, reshaping how content is produced, delivered, and experienced across Europe.** Moving beyond passive content consumption, TRANSMIXR enables cross-border collaboration and positions citizens as active co-creators through social XR experiences that are inclusive, diverse, and participatory. By harnessing the combined power of AI and XR, we are pioneering innovative media formats that empower creators and audiences alike.

**Consortium Composition :**

- **22 organisations from 12 European countries**
- **7 universities & research centres**
- **8 media practitioners**
- **7 industry partners**
- **A unified vision to shape the future of media**

Working within a consortium can present challenges in collectively implementing DEI principles throughout the duration of a project. Differences in geography, professional sectors, and task assignments may act as significant barriers to shared dialogue and reflection, which highlights the need for a dedicated entity responsible for overseeing DEI efforts.

The questioning grid presented in this guide does not reflect the process followed by the consortium, but is rather a reflexive process on how DEI can be integrated at all stages of project development, starting from the very early phase. It gathers the reflections and expertise of various members of the consortium, notably Sparknews (see below).

# SPARKNEWS | A structure dedicated to integrating DEI within the Consortium

Author of this document, **Sparknews** is a French company whose role is to accelerate the cultural transformation of society towards the respect of planetary boundaries and social justice. It does so by:

- **Enlightening** the media, the cultural sector and businesses about ecological and social issues.
- **Encouraging** all these players to change the way they think, create and deliver value.
- **Transforming** their practices, their models and, beyond that, society as a whole.

This mission has brought Sparknews to facilitate, operate and coordinate alliances of various actors around topics relating to the social and ecological transformation of society. One example is the **Screens of tomorrow guide**, a movement initiated by Sparknews gathering a hundred French audiovisual and film professionals who want to tell stories that highlight a more inclusive and sustainable society.

The role Sparknews embodies in the TransmiXR consortium is the DEI guarantor: making sure it is present at every step of the initiative and creating tools for all actors of the consortium to apply to current and upcoming projects. As such, we held a first meeting dedicated to DEI through a workshop gathering TRANSMIXR partners, to raise awareness, give a common language on the topic and launch a personal and collective reflection on the importance of the topic.

The second milestone was the creation of this guide. Based on the same principle as the Screens of tomorrow guide, it mixes various approaches:

- A theoretical approach to DEI on which the questions and the topics they address are based
- Research on existing guidelines and practices
- Consultation and discussions with consortium members to ensure relevance and the sharing of concrete best practices

# A Growing Need for DEI Considerations in the Digital Industry

### Initial observations: technology is currently at the root of various forms of exclusion

- Worldwide, there exists a digital gap that restrains certain populations from accessing and using new technologies

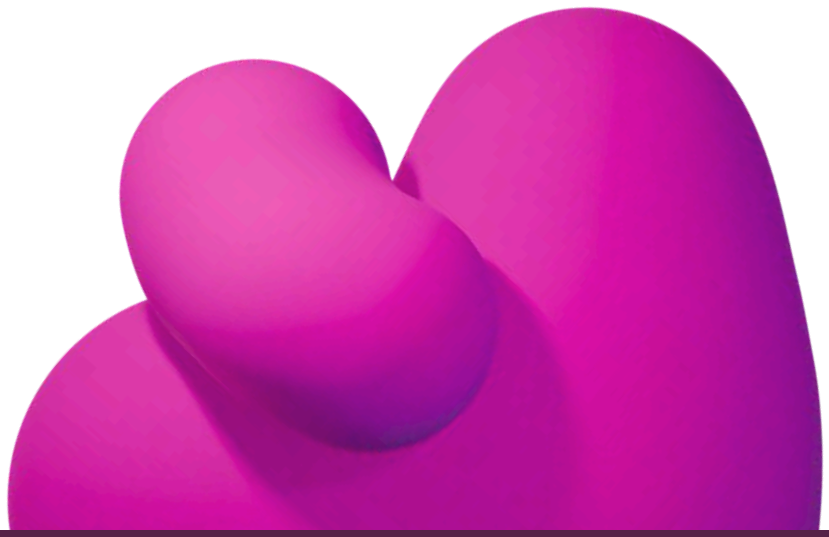
  **→ Bridging the digital gap and developing technologies that are accessible to most (if not all) should be a priority in a context of accelerated digital transformation and rapid appearance of new technologies.**

- The technology sector remains a deeply unequal one in terms of the diversity of its teams, notably looking at the gender gap

  **→ We cannot expect new technologies to be truly inclusive when they are always thought and developed by a non-representative segment of the global population.**

- There is increased concern on the way in which generative technologies are reproducing and even reinforcing existing bias.

  **→ Biases in human teams (especially non-diverse ones) and in technology should not be left unchecked as they contribute to the reproduction of patterns of discrimination, exclusion and oppression.**



# A Growing Need for DEI Considerations in the Digital Industry

As well as a **moral requirement** to ensure new technology-based tools are able to benefit the greatest number of people possible, the global regulatory framework is steering towards greater expectations for actors of the digital industry. In the European Union, the **European Accessibility Act** imposes accessibility requirements on key products and services (digital devices, e-commerce and banking services). Similarly, in the United States, the **Americans with Disabilities Act** (ADA) requires businesses and public entities to make their websites and digital offerings accessible.

Although restrained to certain strategic online services for now, these legislative efforts are part of a global trend to recognise digital access as a fundamental right, as shown by the evolution of the **World Wide Web Consortium's (W3C) Web Content Accessibility Guidelines** (WCAG, see below), the cornerstone of web accessibility globally. The guidelines are continually updated to cover a wider range of disabilities and technologies, enabling them to remain relevant and effective in promoting digital inclusion.

If accessibility aspects are well represented in regional and international frameworks, it is less so regarding the Diversity, Equity and Inclusion dimension of technology. DEI principles, together with accessibility requirements, should be integrated throughout the entire life cycle of technology, from ideation to user experience:

- **Technology conception, design and development:** ensure diverse perspectives in idea generation, conception, testing and finalization ; design interfaces and interactions that accommodate different abilities and backgrounds.

- **Professional use:** Empower media, creative industries, and curators with tools that enable diverse storytelling and provide them with guidelines and best practices for inclusive content creation.

- **User experience:** Guarantee that the final experience is engaging, representative, and accessible to all audiences.

# The Content and Experience Offered to Final Users

# Accessibility

## A. Addressing Users Physical, Emotional or Intellectual Differences

- How to make the content/experience accessible to people with reduced mobility (eye-tracking or head-tracking technology, sip and puff joysticks, sticky keys, gaze-based or voice-based commands…)?
- How to make the content/experience accessible to visually or audibly impaired people (braille, screen readers, subtitles, transcripts, audio descriptions, accurate captions, haptics…)?
- How to make the content/experience accessible to low-income populations* (free access, reduced rates, availability of affordable digital devices…)?
- How to make the content/experience accessible to neurodivergent* people (no flashing content, large buttons, start/pause controls, flexible time limits…)? *3
- How to take into account the digital gap* and make the content/experience easily usable by people/organisations who don't have access to/knowledge of high-technology environments?
    - How to make the functionalities as easily understandable as possible (guidance, control, user interface)?
    - How to make sure the content is accessible for all ages (kids to elders)?
    - How does the technology account for different levels of digital literacy*? Does it require certain skills to be used ?
    - Is the content/experience accessible with widely used devices (smartphones, computer) or does it require high-tech equipment?

*3 Ctn. (2024, November 26). Digital Disability Inclusion : Accessibility Solutions for People with Disabilities. Community Tech Network.

- Does the immersive technology have built-in accessibility presets or customisable profiles?
- Does the immersive experience cater to diverse linguistic audiences (multi-language support, culturally adapted translations)?
- In the case of interactions between the user and the digital environment, how to make the interfaces for interaction usable by all (gaze-based or voice-based commands, not requiring a large range of movement to operate…)?

## Approaching disability through the lens of the social model

**The social model of disability** says that disability is caused by the way society is organised, rather than by a person's differences or difficulties. It looks at ways of removing barriers that restrict life choices for disabled people. When barriers are removed, disabled people can be independent and equal in society, with choice and control over their own lives.

**Barriers are not just physical.** Attitudes found in society, based on prejudice or stereotype (also called disablism), also disable people from having equal opportunities to be part of society.

The social model of disability says that disability is caused by the way society is organised. **The medical model of disability** says people are disabled by their impairments or differences.

**List of characteristics to take into account, following Universal Design principles (see below):**

- Difficulty interpreting or processing information.
- A susceptibility to fainting, dizziness, or seizures.
- A speech impediment.
- Difficulty processing sensory input.
- Blindness (loss of sight).
- Low vision (limited sight).
- Deafness (loss of hearing).
- A hearing impairment.
- A mental health impairment.
- A need for caregiver assistance.
- Difficulty moving the neck or head.
- Limited stamina.
- Difficulty sitting.
- Limited coordination.
- Limited sensation.
- Limited balance.
- Loss of upper extremity motor control.
- Loss of lower extremity motor control.
- Difficulty reaching, lifting, or carrying items.
- Difficulty bending, kneeling, etc.
- A reliance on walking aids or mobility devices.
- Difficulty manipulating items.
- Chemical sensitivities.
- An extreme height or weight.
- …

## Barriers to think about:

### AI-powered tools

- Speech recognition system barriers regarding non-standard speech patterns
- Inaccessible outputs such as providing text or audio alternatives for visual contents created

### XR-powered tools

1. **Software Usability**
    - Sensory and cognitive overload, cybersickness* or post-use disorientation*, especially for neurodiverse users
    - Inaccessible menus and navigation interfaces, especially for people with visual or hearing impairments
    - Poor avatar rendering hinders lip reading and sign language use
2. **Hardware Usability**
    - Tools such as controllers or headsets built in the technology are incompatible with assistive devices (glasses, hearing aids, wheelchairs…)
    - Need for external assistance to set up and operate devices (lack of standardized interaction modalities)
    - Individual apprehension about the sense of isolation when using VR tools can negatively affect user confidence and ease of interaction within the virtual environment.

## B. Addressing your own Barriers and Limitations

**Which accessibility concerns are you not able to address and why?**

Keeping in mind both the benefits and potential barriers of immersive and generative technologies when it comes to accessibility, it's important to recognize that AI and XR tools are not always designed to address every accessibility need. While full accessibility may not always be possible, efforts should still be made to offer the most accessible content and experience for as many users as possible, when developing or using these technologies.

This guide provides you with key points to help reflect on the choices you make in the cultural, creative, or media sectors when integrating AI or XR-powered tools into the content or experiences delivered to end users. For instance, if XR-powered tools are not accessible to people with reduced mobility, or with visual or hearing impairments, there should be a clear ethical justification for their use in serving a specific audience. Ideally, an alternative should be offered for those excluded from the experience.

On the other hand, as AI and XR may create barriers to accessibility, they can also help make content and experiences more accessible to certain categories of people.

## B. Addressing your own Barriers and Limitations

### Accessibility issues addressed:

**AI-Powered Tools *4**

- AI-tools such as natural language processing (NLP), machine learning, speech recognition, and image recognition enhance web accessibility and can automatically generate alt text for images, convert text to speech, and provide voice-command navigation for people with vision, cognitive, mobility or speech impairments.
- AI enables real-time language translation, sign language recognition, and speech-to-text services for people with hearing or language barriers.
- AI-based tools can scan websites for accessibility violations and suggest or even implement fixes to improve conformance with accessibility guidelines.

**XR-Powered Tools *5**

- XR tools can help visually impaired users with environmental awareness using echolocation, haptics, spatial audio, and object localization.
- XR can support sensory needs, reducing overstimulation for example, and enable engaging, accessible and individualized learning experiences for neurodiverse users.
- XR can simulate diverse environments, helping to break down accessibility barriers.
- XR systems can enhance communication for Deaf and Hard of Hearing (DHH) users with automatic speech recognition, visual augmentation, and avatar-based sign language.

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*4 Ara, J., Sik-Lanyi, C., & Kelemen, A. (2023). Accessibility engineering in web evaluation process : a systematic literature review. Universal Access In The Information Society, 23(2), 653-686.

*5 Creed, C., Al-Kalbani, M., Theil, A., Sarcar, S., & Williams, I. (2024). Inclusive AR/VR : accessibility barriers for immersive technologies. Universal Access In The Information Society, 23(1), 59-73.

# Diversity

- In the case fictional characters are depicted, how to make them representative of the depicted population?
- Can profiles be created at the intersection of several identities?
- Considering how you chose to address the topic, how does it take into account multiple perspectives? How does it include the voice and points of view of the people directly affected by it?
- How does the technology allow adaptation to reflect the diversity of participant groups? In the case of games/interactive interfaces with avatars/narrators, is there the possibility to choose from and experience a diversity of profiles (e.g. narrator voice available in both gender, ability to change the physical appearance and attire, avatars with disabilities…)?
- If a certain character/identity is chosen, why and how does it help convey a certain narrative with diversity principles in mind?

**A (non-exhaustive) list of categories to think about :**

Age, name, sex, gender, sexual orientation, geographical origin, perceived origin, social-economic background, occupation, physical characteristics and distinguishing features, disabilities, health condition, assigned role, values, cultures and traditions, religion, beliefs…

# Representation / Narratives

I**n any audiovisual medium that includes avatars or personalized characters, thoughtful reflection on representation is essential.** The way a character is designed sends a message to the user, who may or may not identify with that character. The objective is to create representations that feel authentic and relatable for people with similar characteristics, while avoiding stereotypes that could either alienate users or reinforce misleading and harmful perceptions in others.

**It is especially true for the creative sector.** Even though the choice of avatars' or fictional characters' identity and appearance falls into the realm of authors' "creative liberty", it deserves to be reflected on and questioned in the light of Diversity, Equity and Inclusion principles. This remains true and even requires heightened attention when character creation is entrusted to AI tools and when the experience is immersive, allowing a closer and more emotional connection with characters.

## A few examples to think about conveying stereotypes :

- The representation of **queer-coded characters in children's films** has recently come under scrutiny, as these characters are often portrayed as villains. This recurring trope can reinforce harmful stereotypes by associating queerness with negativity, ultimately shaping children's perceptions of certain identities in damaging ways. *6

- Studies show that **minority groups, such as people with disabilities, are underrepresented in video games.** This lack of representation often reflects both the internal culture of game studios and the perceived expectations or preferences of players. *7

- **American horror films *8 have long reinforced harmful stereotypes about Black people.** Black men have often been portrayed as monstrous figures, hyper-focused on white women, while Black women are frequently depicted with a distorted or hypersexualized identity, or linked to voodoo and dark magic *9.

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*6 Veera, S. (2023). The big, the bad and the queer: Analysing the queer-coded villain in selected Disney films. Emerging Scholars, 2, 62-74.

*7 Shell, J. (2021, March 13). What Do We See : An Investigation Into the Representation of Disability in Video Games.

*8 Horror Noire: A History of Black Horror, Xavier Burgin (2019).

*9 Unmasking Hollywood horror's racial stereotypes. (2025, March 12). Frieze.

- How to ensure the content/experience does not harm any group, especially minorities?
  - If it does exclude a group/minority*, what are the reasons motivating this choice ? Is it justified by the selected topic and angle?

- How to ensure the way people are portrayed does not misrepresent and convey stereotypes about them?

  - Has there been a reflection to make sure the representation of diversity is not based on simplistic assumptions?
  - Could changing how characters are depicted convey another message to participants?

- How to ensure the way the topic is addressed takes into account multiple perspectives and includes the voice and points of view of the people directly affected by it?

- In the case of a multi-user platform with user-generated content, how to make sure users aren't exposed to discriminatory* and harmful content? What moderation processes are in place to ensure the safety of users?

- How to ensure the treatment of the topic embraces its complexity and takes into account social realities (gender inequality, class struggle…)? How do we ensure it does not favorise a particular, biased opinion/perspective/vision?

- For AI-generated content, how to make sure that it doesn't convey a certain message reinforcing stereotypes* or only showing a certain culture, gender, …

**AI-Based Tools Biases**

Research has shown that AI systems carry inherent biases. Through the generation of text and images, AI-based tools can perpetuate stereotypes related to gender, race, political affiliations and others.
In 2023, a study analyzing over 5.000 AI-generated images revealed that gender and racial stereotypes were frequently amplified. Similar patterns were found in AI-generated text, with large language models (LLMs) displaying tendencies to reflect and reproduce gender bias, homophobia, and racial stereotypes. Notably, evidence of bias against women was observed in content produced by models such as OpenAI's GPT-3.5 and GPT-2, as well as META's LLaMA 2.

**Sources :**


- UNESCO & IRCAI. (2024). *Challenging systematic prejudices : an investigation into bias against women and girls in large language models.*
- Nicoletti, L., & Bass, D. (2023, June 9). *Humans are biased. Generative AI is even worse: Stable Diffusion's text-to-image model amplifies stereotypes about race and gender — here's why that matters*. Bloomberg.

# The Conception, Design and Development Phase of the Technology

*Questions for teams in charge of project development, call for proposals, team constitution, design, development and beta testing.*

**To conceive, design and develop technologies according to Diversity, Equity and Inclusion principles, it is important to firstly consider these three questions:**

## When?

These considerations should start well before the design phase. To ensure that Diversity, Equity and Inclusion efforts are truly embedded from the beginning, it is essential to apply these principles during hiring, team formation, and partnership selection.

Building accessibility, diversity, and representation into your project requires a holistic approach: **one that keeps these values in mind throughout every stage of the process.**

## Who?

It can be challenging for everyone on the team to consistently keep these topics in mind. Since questions around Diversity, Equity and Inclusion should surface throughout the entire project, the responses need to be discussed and implemented collectively.

While DEI principles are co-developed, **it is worth considering having a dedicated person, team, or agenda in place** to ensure these issues are addressed thoughtfully and meaningfully.

## How?

It is also important to think about how to **track progress and implementation of these topics, and to ensure that commitments are upheld throughout the project**.

For this to work effectively, it should not rely solely on individual effort or goodwill. Instead, consider setting up clear structures, shared accountability, and measurable goals to help make sure you have done everything possible, and to recognize and value the team's efforts in contributing to this essential part of the project.

# Diversity

- Is the technology developed and beta tested by a diverse team (parity, representativity of ages, socio-economic and ethnic backgrounds*, disabilities…)?
- Is the technology developed with people and organisations (e.g. data providers, hosts…) which promote diversity and implement DEI policies?
- Is the technology developed and beta tested in an inclusive environment (ability to speak and listen to all opinions…)?

# Accessibility

- How was the team constituted in the ideation phase/requirement gathering process? Were relevant people involved to make sure accessibility was a criteria to be followed?
- What kind of accessibility criteria were taken into account when building the technology?
- Is the technology submitted to review by field actors and/or associations to ensure its accessibility?
- Is the technology co-designed collaboratively in teams comprising individuals with diverse abilities and tested with them?
- What digital accessibility training was delivered? Are the teams equipped with the knowledge and skills necessary to design, develop and maintain accessible digital content? How was the training adapted to the different roles involved (designers, content creator, developers)?
- What tools were used to check the accessibility of the content? What standards were used as reference?

# Accessibility

## Some Accessibility standards and guidelines:

### WCAG 2.1 / WCAG 2.2

It provides technical specifications to improve the accessibility of websites and many other digital experiences.

**The POUR principles: checking compliance with WCAG**

Content must be:

- **Perceivable**: information and interfaces must be presentable to users in ways they can perceive (colour, contrast, font size, captions…).
- **Operable**: interfaces and navigation must be functional for users in ways they can operate (voice commands, keyboard…).
- **Understandable**: information, interfaces and instructions should be easy to understand and use
- **Robust**: the content should allow for reliable interpretation by a variety of users and assistive technologies.

These principles can be applied to any kind of digital product or service, no matter the underlying technology. To know more: Web Accessibility Initiative websit

### EN 301 549

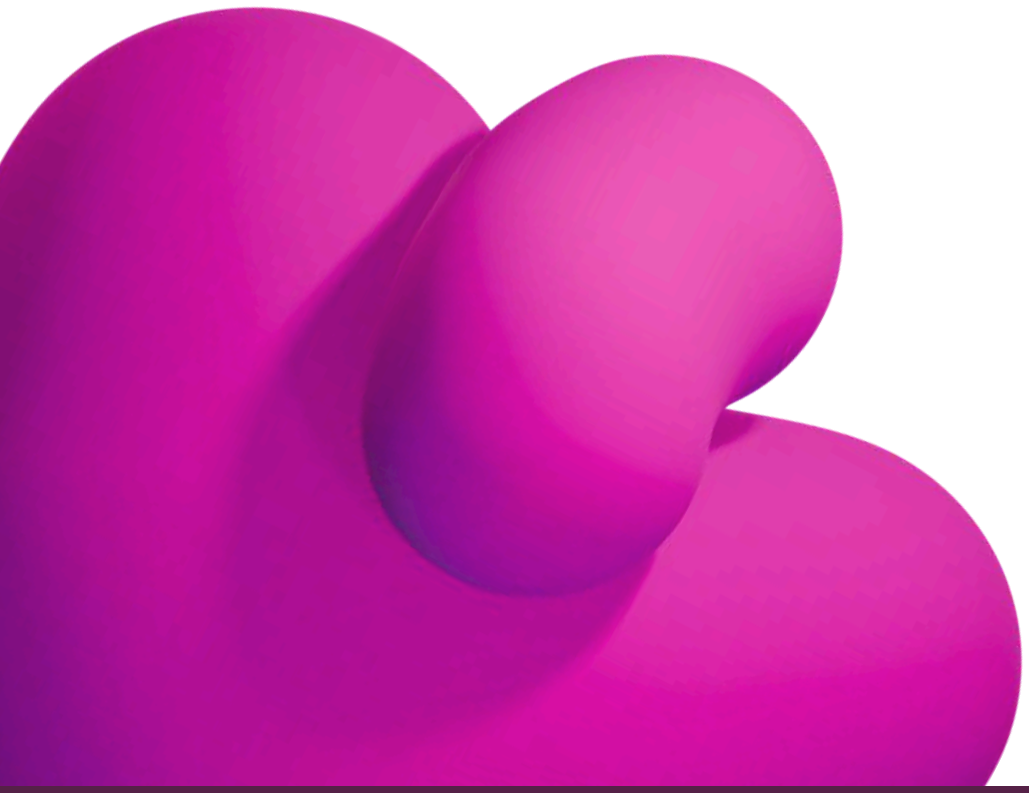
This European standard provides accessibility requirements for ICT products and services.
To know more: **ETSI**

### XR Accessibility Guidelines by XR Association (XRA):

'CHAPTER THREE: Accessibility & Inclusive Design in Immersive Experiences' is a starter guide for developers designing reality-expanding experiences.
To know more: **XRA**

# Representation / Narratives

- How does your structure address Diversity, Equity and Inclusion topics and raise awareness among its teams?
- In the case of a multi-user technology, what kind of safeguards can be integrated into the design to ensure that user-generated content adheres to inclusivity principles and does not promote discriminatory or harmful views?
- In the case of a multi-access technology, what moderation mechanisms can be integrated into the design to guarantee the safety of users in their interactions by preventing and addressing harmful behaviours such as racism, homophobia, sexism, ableism etc. ?
- What safeguards can be implemented to ensure that the technology cannot be used at the service of the diffusion and promotion of harmful/discriminatory content?
- How did the designers ensure outputs of their work aren't biased? For example, did they implement a method to check their unconscious biases?



# Universal Design principles

A concept coined by Ronald Mace, universal design is design that is **usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.**

**Design that is usable by all people…**
Universal design aims to make products and environments accessible and usable by everyone, regardless of age, ability, or status in life. The focus should be on creating intuitive, flexible, simple designs, minimizing physical effort, and accommodating all users through perceptible information presentation.

**To the greatest extent possible…**
Something universally designed will work for as many people as possible, including those with any impairment of the body or mind. UD will be functional for anyone, regardless of one's body and mind conditions.

**Without the need for adaptation or specialized design.**
Adaptation is a process in which an individual changes how he or she interacts with something. This often includes an assistive product or a different technique. Specialized design is specific to a demographic or need. If elements in a design serve no purpose for some people, the design may be accessible [to some] but not universal [for all].
Universal design provides usability to everyone.

**To learn more:** https://universaldesign.org/definition

# What is an Unconscious Bias?

**Definition by Harvard University:**
Snap judgements we make about people and situations based upon years of subconscious socialization. It can come from our own background, personal experiences, societal stereotypes and cultural context and can have harmful effects.

*To know more:* Understanding Unconscious Bias

# How can you Check Yours?

## Become Aware

Take the time to learn about the different biases you might be prone to. Here are some examples of common ones :

- **Affinity Bias :** The tendency to gravitate toward people similar to ourselves
- **Confirmation Bias :** The tendency to look for pieces of information that support our pre-existing views and ignore data that contradicts our views
- **Anchor Bias :** The tendency to anchor to the first piece of information given about a subject

## Find Your Trigger

Pay attention to situations when you are most likely to experience these biases (meetings, making decisions, interacting with specific groups or individuals).

## Slow Down

Take a moment to consider your response before instantly reacting.

## Do One Small Thing Differently

Invite someone new to kick-off a meeting, seek feedback from a quieter participant and consider their opinion...

*To know more:* 4 steps for busting unconscious bias by Devex

### Implicit Association Test (IAT)

The Implicit test is part of the Project Implicit – an organization and international collaboration of researchers who are interested in implicit social cognition. It isn't a pass-or-fail test; it is a tool to help people think about unconscious biases they might not realize they have.

To take the test : Implicit Association Test (IAT)

# The Professional Use of the Technology

# Questions for all Professional Users, in the Media, the Cultural or Creative Sectors

## Preserving an Accessible and Inclusive Outcome

As a professional using immersive and generative technology to deliver content to an audience, one must make sure to **provide the most accessible, representative and inclusive user experience**.

The media and cultural sectors face accessibility barriers in their most "traditional" forms (i.e. without the use of content or experience-enhancing technologies), which can be linked to socio-economic background, language barriers or the restrictions imposed by physical infrastructure (e.g. reduced mobility access to a museum). As mentioned above, technologies such as AI can help overcome some accessibility obstacles (e.g. automatic and multi-languages subtitles generation). As a professional using those tools to offer an enhanced content and experience, **two main reflexions should be carried out**:

- Is the technology helping to overcome some accessibility obstacles and opening the content and experience up to a wider audience?

- Does the technology come with other barriers to access that wouldn't have been there in the case of a tech-free offer? If so, which are they, how can they be lesser and does the gain justify the compromise?

In the same way, biases and mis-representations exist in those industries with or without the use of AI or other generative and immersive technologies. However, particular attention should be paid to the **reinforced biases** those technologies may bring with them. Since it would be unrealistic to affirm a bias-free technology exists, there are still some questions to make sure to have in mind regarding the representation and narratives conveyed:

- What biases may this technology bring and/or reinforce ? How to be as aware as possible of those biases in order to minimise or overcome them?

- What fact-checking mechanisms are in place to check the reliability and truthfulness of the content? Can the enhanced experience allowed by the technology be used to promote Diversity, Equity and Inclusion values to participants (through a more complex narrative, the addition of visual content, a more immersive and engaging experience…)?

**Those reflections should be based on and solidified with the list of questions contained in previous sections.**

# The Professional Use of the Technology

# Questions for all Professional Users, in the Media, the Cultural or Creative Sectors

## Questioning the Technology's Utility

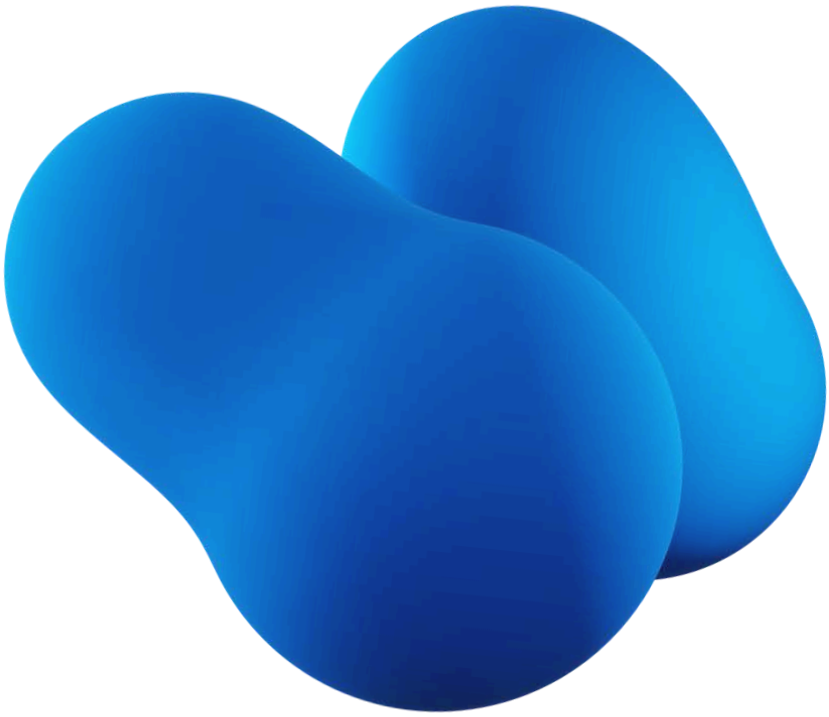
There are many reasons why professionals of the cultural and media industries integrate immersive and generative technologies in their offers : enhancing audience engagement, expanding creative possibilities, personalizing experiences, improving accessibility, and staying at the forefront of innovation.

As an industry relying on an audience's interest and attention, it seems inevitable **to keep up with technological evolutions which may bring the content to a wider audience**.

Moreover, generative and immersive technologies can:

- make for **gains of time and energy** (e.g. multi-lingual and simultaneous translation)
- and also **allow for more flexible teamwork and diffusion** (e.g. a VR device can be transported easily from venue to venue).

It is however crucial that practical gains do not invisibilise the ethical aspect of technology use.



# TRANSMIXR Partners:

# Examples of Good Practices

## Conception and Development of the Technological Tools

**The tools are designed and developed collectively with the final users, who are involved from early stages:**

- Show prototypes,
- Collect feedback,
- Co-design immersive scenarios,
- Adapt technologies to their workflows and expectations.

**The tools developed are human-centered:**

- Awareness of bias in user interfaces to avoid reproducing stereotypes.
- Efforts to diversify test participants, especially for usability testing.
- Development of tools that offer equivalent experiences across devices (either on screens or through VR headsets).

**In immersive experiences, avatars are designed to take DEI principles into account:**

- Avoidance of hyperrealistic avatars to reduce discomfort (uncanny valley).
- Design of non-human visuals for avatar representations to ensure neutral, inclusive experiences.

**Accessibility in immersive experiences is approached through design strategies, such as:**

- Critical evaluation of micro-gestures used as commands in XR, which may be unsuitable for users with limited manual dexterity or prone to causing physical discomfort.
- Adaptation of VR content and interactions to support personal change in individuals facing specific psychological or social challenges.

**Some AI-tools were developed to answer some DEI issues:**

- To keep track of the news content and calculate gender balance in coverage in broadcasting
- To automate the translation of subtitles for social media and ensures inclusivity for multilingual or hearing-impaired audiences

# TRANSMIXR Partners:
# Examples of Good Practices

## Organizational Structure and Culture

**DEI is embedded within the consortium organizations' structure and culture through several initiatives:**

- A **DEI Champions Forum** provides a dedicated internal space to foster open dialogue on diversity, equity, and inclusion across all levels of the workforce.
- A **DEI Toolkit** is made available to teams to raise awareness, encourage self-reflection, and support inclusive practices in everyday work.
- **Best practices** are regularly shared internally, ensuring alignment with evolving user needs and promoting a culture of continuous learning.
- **Recruitment strategies** are actively designed to support gender balance and increase diversity within teams, despite challenges in sourcing talent with highly specialized skill sets.

**DEI is also promoted through ongoing awareness-raising and educational activities, such as:**

- **Visits** to minority communities to deepen understanding of diverse lived experiences and foster cultural sensitivity.
- **Webinars** featuring DEI experts, focusing on specific topics to inform, engage, and inspire team members.
- **Comprehensive training programs** covering key areas such as inclusive practices, unconscious bias, and accessibility, designed to build both awareness and practical competence.

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**We hope this short guide inspired you to explore the wonderful possibilities of XR and AI!**

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## Our Consortium

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