



DIGITAL TRANSFORMATION IN THE CULTURAL AND CREATIVE SECTORS AND INDUSTRIES

Executive Summary



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Executive Summary

This report is devoted to the analysis of the digital transformation of the cultural and creative sectors and industries. The methodology has combined extensive documentary analysis and in-depth interviews with technology specialists from technology centres, private companies and training centres with knowledge of the cultural and creative sectors, especially the video game and language technology sectors.

The report is structured in four main blocks of content: first, the global context around digital transformation is analysed from six perspectives: existing strategies, technology trends, data, intellectual property, ethics and rights, and skills. The second block emphasises the intersections between this phenomenon of transformation and the singularities of CCIs. The third block focuses on two sectors specifically targeted for study because they are at the technological forefront of the CCIs: on the one hand, audiovisual and video games and, on the other, the technological side of the language industries. The study closes with the conclusions of the research.

Digital and sustainable are two attributes that define and characterise the **global scenario** today. They affect all sectors, set agendas and will radically shape the future. Europe is determined to consolidate its digital sovereignty and set the rules that will govern data, technology and infrastructure. The focus is on people and its approach rests on three pillars: technology, economy and society. Europe's definition of **digital transformation** refers to the integration of digital technologies in enterprises and their impact on society. Its strategy includes a reform agenda that has already started with the Data Governance Act, the Digital Services Act, the Digital Markets Act and the Cybersecurity Strategy.

In the framework of culture and the creative sectors, the UNESCO roadmap sets out practical guidelines aimed at promoting the diversity of cultural expressions in the digital environment. It points out that there is an urgent need to address global challenges that are deeply linked to the digital revolution, data, algorithms and Artificial Intelligence.

The Basque Country has a Strategy for the Digital Transformation of the Basque Country 2025 (ETDE2025), which is part of the triple technological-digital, energy-environmental

From the perspective of **innovative technologies, Artificial Intelligence** is currently the most disruptive and the most transformative. Its potential to generate value is based on the ability of machines to learn and solve problems autonomously from data. It draws on large amounts of data and relies on the computational power of complex algorithms to recognise patterns, make predictions or execute actions. The data comes from the physical world, through the sensors of the so-called Internet of Things and Big Data, which makes it possible to store large amounts of heterogeneous information at the necessary speed.

Europe aspires to be a world leader in AI, with a focus on ensuring excellence, trust, security and fundamental rights. In April 2021, the proposal of Parliament and the Commission laying down harmonised rules on Artificial Intelligence was published, which establishes four levels of risk in relation to the use of AI. In short, what is very advantageous for users and companies can become very complicated for algorithm developers. The activity of key players in recent years shows the strategic importance of AI in shaping the world to come.

Among the most important technologies currently in use are the following:

Data analytics	They convert disconnected information into useful and understandable knowledge. This framework includes technologies such as Business Intelligence, Data Mining, Big Data, Neuromarketing and AI, which enable optimisation and acceleration of everything that is predictable and automatable.
Imaging/video technologies	They includes immersive technologies such as virtual and augmented reality, 360 videos, 3D animation, 3D reconstructions, artificial vision, holography, BIM, motion capture, etc. These are tools that allow us to enrich physical experiences, carry out simulations and visualise spaces and interact with the public.
Language technologies	Computers can understand, process and generate human-like language thanks to natural language processing (NLP). Search engines, predictive text, simultaneous machine translation, chatbots or intelligent assistants, sentiment analysis or text analysis are examples of this family of text-based tools. They are based on machine and deep learning models.
Portable technologies	These include drones, smart wearables, watches and mobile phones. They are internet-connected devices that incorporate sensors to capture and send data.
Platforms	Cloud services, streaming, collaborative work, surveys or online events, etc. are in this block of tools. Covid-19 boosted their daily use.
Blockchain	This is the set of technologies that allows the reliable and secure relationship of any type of transaction between two or more elements (people/machines) without the need for trusted intermediaries.

Data is the raw material of AI and is characterised by the fact that it is not an exclusive asset. Until now, despite legislation on the protection of personal data, large companies have imposed their rules in a market dominated by a few players and whose strategic importance is central. The European response to this phenomenon is the European Data Strategy (February 2020), an ambitious programme of horizontal legislative measures, such as the Data Governance Act and the Data Act. Two ideas mark the European strategy: **access** to data and the **ability** to use them. What the new European regulatory rules aim to achieve is full respect for privacy and data protection rules, as well as for competition. But beyond regulations, the aim is to create an attractive, secure and dynamic data economy by investing in next generation tools and infrastructure to store and process data, adding cloud computing capacity, as well as pooling European data in key sectors, creating common and interoperable data spaces. In support of the European Data Strategy, the Commission supports the development of → **common European data spaces** in 10 strategic economic sectors and areas of public interest: health, agriculture, manufacturing, energy, mobility, finance, public administration, skills, the European Open Science Cloud and the key cross-cutting priority of achieving the

objectives of the Green Deal. These have subsequently been joined by data spaces in other important areas, such as **media and cultural heritage**.

The use of AI raises important **intellectual property** challenges. The European Directive on copyright and related rights in the Digital Single Market (2019/790) proposes measures to improve the transparency of revenues from digital sales of creative works and content, including the principle of adequate and proportionate remuneration for authors and artists in the digital market. When AI is used to generate content, the debate over whether authorship can be non-human comes to the fore and the very **concept of authorship** itself is called into question. Another interesting issue is the concept of **original** work. Another issue is the intellectual property rights of the **data** on which AI feeds. One of the underlying issues is the **ownership of the work** when a technology provider is involved in a creative project. Finally, it raises new questions about copyright infringement, which is the use of works protected by copyright law without permission for a use where it is required.

As can be imagined, a tool of such calibre raises challenges associated with the **rights and ethical principles** that govern its framework of application. The European Commission has been working since 2018 on a regulation to ensure that Artificial Intelligence (AI) systems placed on the EU market and used in the EU are safe and respect the existing fundamental rights legislation and EU values. The key is that it seeks to balance innovation and AI development while guaranteeing the fundamental rights of individuals.

The EU has developed a number of policies and initiatives to increase **digital skills** among both workers and consumers. In Europe, more than 90% of professional roles require a basic level of digital skills. However, around 42% of Europeans lack basic digital skills, including 37% of workers. This is why the EU is promoting the European Skills Agenda, the Digital Education Action Plan, and the Digital Skills and Jobs Coalition.

Regarding the **intersection between digital technologies and the Cultural and Creative Sectors**, it is not a new phenomenon, but in the last decade it has had a direct impact on the entire value chain, altering both cultural and creative practices and business models. In fact, more cultural and creative content is being created and consumed in digital format than ever before, while more classical cultural practices show signs of stagnation or decline. According to UNESCO (2022), there is concern about the absence of any mention of cultural and creative industries in most national AI strategies and plans, which may result in the sector's specific concerns and needs being neglected. It should be noted that one of the most notable new features of AI is that it will be possible to automate creative tasks.

Culture does not play a relevant role in AI strategies despite the fact that cultural data (texts, images, sounds) are being used to train algorithms, to design automated applications or to generate songs, stories and works of art that are featured in the media.

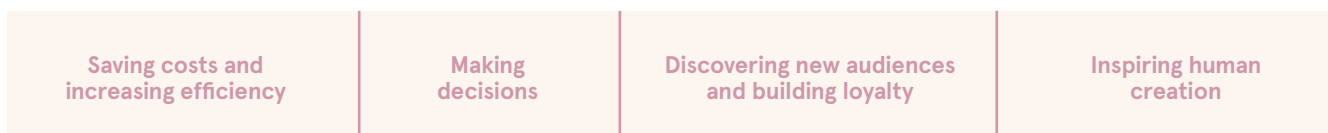
Within what is conceptualised as Cultural and Creative Sectors there are varying degrees of distance from the clearly technological sectors. Indeed, one of the conceptual debates in defining the scope of the CCSs relates to the inclusion and definition of the digital content sector. According to Eustat data, the high and medium-high technology sector contributed 8.9% of the total gross value added of the economy of the Autonomous Community of the Basque Country in 2020. These data are significant for the CCI sectors because **high-technology or cutting edge technology services are including CCI economic activities**, such as film, video and television programme activities, sound recording and music publishing, radio and television programming and broadcasting activities.

Within the framework of the CCIs, three analytical approaches can be considered that respond to the different **positions of each sector** in relation to their level of digital transformation. The analysis answers the question of where digital technologies are being used.

From the point of view of the **use of different technologies** within the cultural and creative sectors, different application scenarios can be established according to what kind of digital technologies are being used in the different cultural and creative sectors.

Finally, the view from the **value chain** also provides elements to take into account in the business models that will be generated in this new disruptive scenario. This perspective provides food for thought on **how** digital technologies are being used and what structural changes they imply in the value chain. In this sense, the digitisation process has led to a vertical integration of the value chain despite the specific characteristics of each sub-sector.

Technological tools can be analysed according to their **scope of application or purpose**. It is about approaching their use from the instrumental or utilitarian perspective of what they are being used for. This is the outline that followed the → **report** commissioned by the European Commission on the opportunities offered by AI in CCSs, where four areas of implementation are identified.



In the interviews conducted for this study, two preferred areas of application were identified, namely process optimisation in the search for greater efficiency and cost savings and, from a more creative point of view, to enrich the user experience.

With regard to the **potential assets of CCSs**, it should be borne in mind that these are sectors whose content is digitised. The resources devoted to digitisation by heritage institutions and by the cultural and creative industries, in particular, make their starting position concerning data potentially strong. This is defensible at the macro and sector-wide level. It does not mean that the use being made of such data is profitable in economic or social terms, nor efficient from a public knowledge or decision-making perspective, nor possible in all cases, due to the ownership of such data and existing limitations on access to them.

The third block of the study is devoted to the **analysis of two sectors**: on the one hand, **video games and the audiovisual sector**, which are particularly advanced in the use of immersive technologies, are analysed; and on the other hand, the technological side of the **language industries**, which are also pioneers in the use of natural language processing, are analysed.

These two sectors are characterised by innovation in the application of advanced technologies, which implicitly involve digital transformation in the development of their processes and services and which serve as a laboratory for experimentation in other sectors, both cultural and creative, as well as other economic activities.

The chapter draws in particular on in-depth interviews with specialists in these sectors, and each of the analyses is carried out from a threefold perspective:

- Technological perspective: the level of development and applications of technology, projects with other sectors, the professional profiles required, etc. are analysed.
- Sectoral perspective: the focus is on the sectoral structure and organisation, as well as its dimension.
- Business perspective: business models, market potential and intellectual property, among other variables, are observed.

The report closes with the **conclusions** identifying four key points for a diagnosis:

Position of the cultural and creative sector

The cultural and creative sector is not a priority in major global strategies. Specific analyses and orientations are being towed along behind the global geostrategic positioning that will shape the future. In terms of the scale needed to interpret these large movements, it is a small sector. In terms of interpretation, it is striking that the new content creators are occupying the space of the historical narrative builders (scriptwriters, authors, musicians, artists, etc.). On the positive side, part of the cultural and creative sectors are at the cutting edge of technology, applying tools that are transforming reality and have, in this regard, the advantage of knowing not only their possibilities, but also their requirements and limitations. These are, for example, video games or language technologies, with projects that transcend the cultural and creative sectors and which have been developing innovative projects in other strategic sectors and on an international scale for years.

Resources and investments

Logically, the larger the size, the greater the need for technical and financial resources. A critical mass is needed in the digital field, and projects that combine efforts would make sense. In parallel, it is necessary to learn how to use and make the most of the basic tools. Regarding the amortisation of such large-scale investments, the current models in the digital environment are not sustainable for most artists. As UNESCO points out, while it has never been easier to share art and creativity with the world, paradoxically it has never been more difficult to charge for doing so. Perhaps the way forward is to sell services in other sectors.

Assets of the cultural and creative sectors

We have a network of leading technology centres that are well positioned at European level. We also have a system of clusters that articulates research and propels the sectoral framework. Moreover, public policies support this system with innovative programmes and significant resources. This model of research support is being transferred to the cultural and creative sectors. These include the KSI Berritzaile programmes and the BDCC's digital transformation support services. We also have advanced research sectors such as those specifically analysed in this study that are succeeding in other sectors. On the data side, Europe has created the common European data space for cultural heritage. It should inspire projects at local level. The same applies to initiatives such as the European Language Grid (ELG), which will offer a large collection of datasets and language resources.



Challenges: regulating, guiding and training

The central issue regarding the development of AI is regulation. Europe is committed to this task and we are at a time of defining and implementing new regulations around data and AI itself. At the same time, an AI ecosystem is being created around AI, consisting of information and decision-making centres and agencies. The Basque technology centres, which collaborate with the CCIs, form part of these spaces, so either directly or indirectly, the cultural and creative sectors must participate and keep abreast of the new developments that will govern this ecosystem in the coming years. There is also a need for specialists or specialised services to help the framework to track, guide and identify intellectual property opportunities. With regard to skills, outside the CCIs there is more and more specialisation, but at the same time, the most in-demand profile is the most transversal. It is not easy to find hybrid profiles with expertise in CCIs and data. The launch of the EIT Culture and Creativity is an opportunity to develop these skills and contribute to driving the digital transformation of the cultural and creative sectors and industries.

