



Searchable multi-dimensional Data Lakes supporting Cognitive Film Production & Distribution for the Promotion of the European Cultural Heritage

Grant Agreement No 101095303

DELIVERABLE 6.3:
**SCENE policy scenarios &
recommendations. R1**

Work Package: 6

LEAD BENEFICIARY:
HYPERTECH (HYP)
Delivery Date: 31.01.2024



Document Sheet

Project acronym	SCENE
Project full title	Searchable multi-dimensional Data Lakes supporting Cognitive Film Production & Distribution for the Promotion of the European Cultural Heritage
Programme	Horizon Europe
Topic	HORIZON-CL2-2022-HERITAGE-01-06
Type of Action	HORIZON-Research and Innovation Actions
Grant Agreement	101095303
Start day	1 February 2023
Duration	36 months

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Document Information

Deliverable number	D6.3
Deliverable name	SCENE policy scenarios & recommendations.R1
Lead beneficiary	HYPERTECH
WP	6
Related task(s)	6.3
Type	Document, report
Reviewers (Organisation)	AUTH, DTT
Delivery date	31.01.2024
Main author(s)	Vasiliki Psatha (HYP)
Contributor(s)	FOKUS

Dissemination level

PU	Public	X
SEN	Sensitive, limited under the conditions of the Grant Agreement	
Classified R-UE/EU-R	EU RESTRICTED under the Commission Decision No2015/444	
Classified C-UE/EU-C	EU CONFIDENTIAL under the Commission Decision No2015/444	
Classified S-UE/EU-S	EU SECRET under the Commission Decision No2015/444	



Document history

Version	Date	Changes	Reviewer/Contributor
v0.1	18/12/2023	1 st draft version	HYP
v0.2	08/01/2024	2 nd draft version with contributions	HYP, FOKUS
v1	28/01/2024	3 rd draft version after internal review	HYP, AUTH, DTT
v1.1	30/01/2024	Addressing review comments & final check	HYP
v1.2	31/01/2024	Final document	HYP



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Abbreviations

Abbreviations	Full name
AAPS	AI-based Audience Preferences Scouting tool
ABT	Audience Building Tool
AI	Artificial Intelligence
API	Application Programming Interfaces
AR	Augmented Reality
AV	Audiovisual
BG	Background
BM	Business Model
CA	Consortium Agreement
CAGR	Compound Annual Growth Rate
CCI	Cultural and Creative Industries
CCS	Cultural and Creative Sector
CDN	Content Delivery Network
CMS	Content Management System
DAM	Digital Asset Management
DRM	Digital Rights Management
EM	Exploitation Manager
EU	European Union
FG	Foreground
GA	Grant Agreement
GCS	Google Cloud Storage
GDP	Gross Domestic Product
IP	Intellectual Property



IPR	Intellectual Property Rights
KER(s)	Key Exploitable Result(s)
KPI(s)	Key Performance Indicator(s)
LiDAR	Light Detection and Ranging
MAM	Media-Asset-Manager
MVP	Minimum Viable Product
NFT	Non-Fungible Token
NLP	Natural Language Processing
NoI	Network of Interest
OTTV	over-the-top television
SEO	Search Engine Optimization
SSO	Single Sign-On
UK	United Kingdom
US	United States
VoD	Video on Demand
VR	virtual reality
WP	Work Package
WGA	Writers Guild of America

Publishable summary

In the pursuit of illuminating the future trajectories and fostering innovation within the EU filmmaking industry, it is imperative to conduct a thorough exploration of the current socioeconomic, technological, and policy landscape. The objective of this document is to provide a comprehensive overview that serves as the foundation for the development of policy scenarios and recommendations.

The socioeconomic landscape of the EU filmmaking industry is multifaceted, involving aspects of international circulation, market creativity, funding dynamics, industry structures, state policies, and the impact of globalization. Studies have explored how European cinema navigates the digital era, the role of creative identity in co-production markets, funding and imagery movements, the interplay between art and commerce, and how globalization shapes the film industries in Central and Eastern Europe.

The digital revolution offers more possibilities and flexibility for distribution and is having a fundamental impact on audience behaviour. It is essential therefore to adapt to the digital era and use its potential to keep existing audiences and reach new ones, and to build bridges between cultural diversity and competitiveness. This comes with challenges: for the industry, in testing new business models and audience development strategies; and for public policies at regional, national and European levels.

This document encapsulates an examination of the EU filmmaking industry, focusing on market trajectories, policy landscapes, and the implications of digital tools. This deliverable serves as a cornerstone for the SCENE project's foresight study, contributing to the identification of future developments and offering insights for the industry's sustainable growth.

The methodology employed a desk research approach, delving into academic literature, industry reports, government publications, and news articles. This analysis aimed to identify trends, challenges, and opportunities within the EU filmmaking landscape. The iterative process ensures continued relevance throughout the project. Sections 1 and 2 provide an overall introduction into D6.3 and its research methodology, respectively. Section 3 provides a holistic view of the EU filmmaking industry, exploring market structures, economic and employment aspects, digital transformation trends, and the policy framework. Insights into funding mechanisms and support programs, crucial for industry sustenance, are also detailed. Section 4 delves into the market trajectories that contribute to a sustainable filmmaking industry. The impact of digital tools is scrutinized in Section 5, addressing the transformative role of technology in various filmmaking phases. From pre-production to distribution, the implications are explored, laying the foundation for understanding the industry's technological landscape. Section 6 outlines policy measures crucial for enhancing the competitiveness of the EU filmmaking industry. It explores the regulatory environment, identifies areas for improvement, and suggests recommendations to foster a thriving and competitive sector. Building upon previous project findings from Work Package 2 (WP2), Section 7 aligns these insights with the overarching goals of SCENE, providing a cohesive narrative that informs the subsequent Delphi exercise. Section 8 ventures into the future, offering initial insights and predictions looking ahead to 2035. This forward-looking perspective aims to prepare stakeholders for potential shifts and challenges, enabling proactive and informed decision-making. Section 9 outlines the methodology for the Delphi exercise, detailing the questionnaire development process. The deliverable concludes with Section 10, presenting the plan and expected outcomes of the SCENE Policy Workshop.

In essence, D6.3 serves as a very important resource, offering a comprehensive understanding of the industry's current state, future trajectories, and policy considerations. The foresight gathered through this deliverable will be instrumental in shaping SCENE's future activities, aligning them with the dynamic landscape of the EU filmmaking industry.

1 Introduction

1.1 Background

The filmmaking industry is undergoing a profound digital transformation, where emerging technologies are reshaping the landscape of content creation, distribution, and consumption. This transformative journey lies at the heart of the SCENE project, and Task 6.3, emerges as a critical chapter in this ongoing narrative. The aim of the task is to reveal future trends and the potential for innovation of the filmmaking industry, examine the impact of various aspects on the competitiveness of the sector and its sub-sectors (pre-production, production, post-production, distribution) and offer insights for appropriate support measures.

1.2 Scope of Deliverable D6.3

Deliverable D6.3 serves as the inaugural release of SCENE's exploration into policy scenarios and recommendations. It encapsulates the initial outcomes of the desk research on the socioeconomic, technological and policy landscape of the EU filmmaking industry as well as leveraging previous project findings from D2.2. The document focuses on anticipating future trajectories, policy measures, and the impact of digital tools on the EU filmmaking industry up to the year 2035. Furthermore, the document provides the questionnaire produced for the 1st of the Delphi exercise, along with a plan for its distribution and a plan for the further dissemination of the Task results, which will be a set of policy recommendations.

1.3 Structure of the Deliverable

The deliverable encompasses chapters that delve into the socioeconomic, technological, and policy landscape of the EU filmmaking industry, market trajectories of sustainability, implications of digital tools, policy measures supporting competitiveness, alignment with previous project findings (WP2), initial insights, and the development of the Delphi questionnaire. The document culminates in a comprehensive plan for a policy workshop and outlines the next steps for the SCENE project.

1.4 Significance of the Deliverable

Deliverable D6.3 holds pivotal significance within the SCENE project, marking the initiation of a dialogical exploration into the policy dimensions that will shape the future of the European filmmaking industry. Noteworthy task outcomes on this deliverable are the insights we gained on the socioeconomic, technological and policy landscape of the EU filmmaking industry, from the desk research, and the questionnaire produced for the 1st round of the Delphi exercise. The foresight that will be gathered from stakeholders through the Delphi exercise at the later stages of this task will not only inform the industry's trajectory but will also lay the foundation for practical policy recommendations. This document aligns with SCENE's broader mission of fostering innovation, sustainability, and competitiveness in the European filmmaking landscape.

2 Research Methodology

The methodology employed for this deliverable involved a comprehensive desk research approach, focusing on gathering, reviewing, and analyzing existing information relevant to the EU filmmaking industry. This extensive examination encompassed a wide array of sources, including academic journals, industry reports, government publications, and news articles. The primary goal was to extract valuable insights into the current state of the industry, covering market trends, policy landscapes, and technological advancements.

The data collection involved a systematic review of scholarly literature, reports from reputable industry sources, and official government publications. The scope included sources covering market dynamics, economic aspects, employment trends, and technological innovations within the EU filmmaking landscape.

A thorough literature review was conducted to understand the scholarly discourse surrounding the EU filmmaking industry. This involved identifying key academic journals, articles, and publications contributing to the theoretical and empirical understanding of market structures, economic implications, and policy frameworks.

Industry reports from recognized institutions and government publications provided crucial data on market trends, competitive dynamics, and policy interventions. These sources offered a real-world perspective on the challenges and opportunities faced by the EU filmmaking industry.

News articles and media analysis contributed to a current and dynamic understanding of the industry. This component aimed to capture ongoing developments, emerging trends, and the industry's response to external factors.

The extracted information underwent analysis to identify overarching trends, recurring themes, and areas of consensus or contention. The analysis aimed to develop a comprehensive understanding of the current landscape, exploring potential shifts and patterns within the industry. Emphasis was placed on identifying the implications of emerging technologies on different phases of film production. The analysis focused on recognizing patterns and shifts within the EU filmmaking industry. This involved identifying trends that could shape the industry's trajectory and understanding the interconnectedness of various factors.

Concurrently, the analysis examined the prevailing policies governing the EU filmmaking industry. This encompassed a review of overarching regulations and sector-specific policies, with an emphasis on understanding the regulatory framework that influences industry dynamics.

The research methodology adopted an iterative process to stay abreast of industry developments. While the findings up to the first year of the project are reported in this deliverable, an updated desk research on the socioeconomic, technological, and policy landscape of the EU filmmaking industry will be presented in D6.10 at M36.

3 Overview of the Socioeconomic, Technological, and Policy Landscape of the EU Filmmaking Industry

This chapter delves into the multifaceted dimensions that shape the present state of the EU filmmaking industry. The EU filmmaking landscape is intricately woven into the socioeconomic fabric of its member states. An analysis of current trends involves an exploration of economic indicators, market dynamics, and the role of the filmmaking industry in contributing to employment and cultural enrichment. The exploration of the socioeconomic landscape will assist in discerning patterns in consumption, audience behaviour, and the overall economic health of the filmmaking sector. This understanding forms the bedrock for anticipating how future scenarios might unfold, considering the evolving needs and expectations of both creators and consumers.

The rapid evolution of technology plays a crucial role in reshaping the filmmaking process. A panoramic examination of technological trends, ranging from advancements in film production techniques to the integration of digital tools, provides crucial insights to this end. Thus, as part of this deliverable we will outline the current technological landscape within the EU filmmaking industry. This concerns the adoption of immersive technologies, the role of artificial intelligence, and the impact of digitalization on various stages of filmmaking – from pre-production to distribution.

Lastly, the filmmaking industry operates within a complex web of policies and regulations. The audiovisual sector is noteworthy for being more regulated than other creative sectors and heavily reliant on public funding. Europe is good at producing a high number of diverse feature films, most European films do not reach all their potential audience in Europe and even less so in the global market. For the most part, films stay on national markets but, even there, some never reach the cinema screen or fail to secure any other distribution channels. An overview of the existing policy frameworks, including but not limited to intellectual property rights, data protection, and funding initiatives, forms an integral part of the analysis. Therefore, the policy landscape to identify areas of support, potential challenges, and gaps that may impact the

competitiveness of the EU filmmaking industry. Consideration is given to regional variations and the implications of overarching EU policies.

Furthermore, the EU filmmaking industry is not an isolated entity but a crucial component of the broader Cultural and Creative Industries (CCIs). It is essential to shed light on the interconnectedness of the filmmaking industry with CCIs, exploring collaborative opportunities, cross-sectoral innovations, and the potential for synergies that amplify the cultural and economic impact of creative endeavours.

Moreover, a forward-looking overview would be incomplete without an exploration of emerging trends and potential disruptions. Task T6.3 investigates how factors like changing viewer preferences, globalization, and emerging business models might influence the filmmaking landscape. This chapter contributes to the understanding of the forces that will shape the future of the EU filmmaking industry. It serves as a crucial backdrop for envisioning policy scenarios that are resilient and adaptive.

In an interconnected global landscape, insights from international perspectives contribute to a richer understanding of the EU filmmaking industry. We will attempt to incorporate global trends, best practices, and potential collaborative opportunities that can further enhance the industry's standing on the world stage. This is to ensure that the policy scenarios and recommendations crafted for the EU filmmaking industry are not insular but align with international developments, fostering cross-cultural exchanges and partnerships. All these Desk Research findings under T6.3 will be harnessed to produce a questionnaire to feed the Delphi exercise and also craft policy scenarios and recommendations for the industry's sustainable and innovative future.

3.1 The socio-economic landscape of the EU Filmmaking Industry.

3.1.1 Market structure and dynamics

The structure of the AV and filmmaking industry appears to be multidimensional and complex. Different players such as content providers and content distributors operate in the value chain from the production of content such as films, TV programmes, or music to its delivery via cinema, TV channels or Internet portals¹. The EU filmmaking industry exhibits elements of concentration, with the dominance of major studios and considerations for market dynamics influenced by factors such as quality competition, distribution systems, and the potential for a pan-European market². The market is characterized by endogenous sunk costs³, indicating that the competition among firms in the broadcasting and cinema industry leads to an increase in the quality of goods. This, in turn, results in higher fixed costs, encouraging market consolidation. Despite the absence of entry barriers, the broadcasting market is expected to exhibit a market structure where not many TV operators can coexist, especially if demand increases³. The evolution of technology might reduce operating costs, but existing operators may focus on increasing the quality of their packages rather than favoring new entrants. The market structure and competition level are influenced by the extent of variety and quality competition. Preferences among consumers, if more dispersed across varieties, may lead to a decrease in concentration, allowing for the entry of new operators catering to specific niches. Major studios' distribution systems, with sales offices in various cities, act as efficient barriers to entry, preventing new competitors from entering the market. The distribution system allows studios to promote and distribute films with minimal additional costs.

The average production budget varies considerably from Member State to Member State. In the UK it stands at EUR 10.9 million, in Germany and France around EUR 5 million and in Sweden EUR 2.6 million. In contrast, in Hungary or Estonia films are produced with a budget on average of EUR 300 000⁴. According to the Motion Picture Association of America, the average budget for US-produced films in 2006 was USD 15 million, while for the US films, produced by the major film studios, the average budget was USD 106.6 million⁴. Hollywood studios focus on producing action-oriented films with special effects, often referred to as blockbusters. These films, not constrained by language, enable studios to develop worldwide marketing campaigns, contributing to their international competitive advantage. European films have to be international successes before they can become trans-European, which is why directors and their companies are not targeting specifically European sources of finance⁵. To create highly competitive European film companies, there is a suggestion that the development of a pan-European-based market at the distribution level could be crucial. Enlarging

the market size may allow for the entry of more firms and the spreading of high fixed costs across a larger output¹.

The dynamics within the EU filmmaking industry are shaped by a combination of artistic expression, cultural diversity, and economic considerations. Factors such as language diversity, regional film support initiatives, and collaborative co-productions contribute to the richness of the cinematic landscape. Additionally, the industry is influenced by global trends, technological advancements, and evolving audience preferences, necessitating adaptability among stakeholders.

The examination of the socio-economic landscape of the industry encompasses various dimensions, including employment generation, GDP contributions, and spillover effects on interconnected sectors. Europe is leading several industrial areas such as pharmaceuticals, chemicals, mechanical engineering, and fashion industries; nevertheless, to maintain and reinforce its competitive advantage, it needs to modernize its industry. CCIs have a societal value that could be reinforced by seeking new collaborative partnerships with, among others, the education, healthcare and service sectors⁶. According to the conclusions of the Impulse paper on the role of cultural and creative sectors in innovating European industry, the European industry needs to generate high-quality products and services with values and meaning in the experience economy. CCIs are a strength for the EU as its cultural diversity and vibrant artistic scene stimulate creativity that is increasingly needed to face economic and societal challenges with relevant innovations. The challenge for Europe is to make the best of its cultural and creative assets to address the digital transformation affecting all areas of the economy and society from skills and jobs to industrial processes, from content creation to ethical concerns⁶.

The EU filmmaking industry serves as a substantial source of employment, involving a diverse range of professionals across the production pipeline. From pre-production planning to post-production editing, the industry fosters a myriad of job opportunities, directly and indirectly.

Beyond its direct contributions, the EU filmmaking industry generates spillover effects that ripple through interconnected sectors. Ancillary services, such as catering, equipment manufacturing, and tourism related to film locations, benefit from the industry's activities.

The Cultural and Creative Sector (CCS) plays a crucial role in enhancing the overall competitiveness of European industry in several ways⁶:

- **Innovation and Creativity:** CCS is known for its high innovation potential and ability to drive creativity. By integrating artistic and cultural elements into industrial processes, CCS can inspire innovative solutions, new product designs, and unique approaches to problem-solving, giving European industries a competitive edge.
- **Cross-Sector Collaborations:** Collaborations between CCS and other industrial sectors lead to cross-innovation, where ideas, skills, and technologies are exchanged to create new products, services, and business models. These collaborations foster a culture of innovation and help industries adapt to changing market demands, ultimately enhancing their competitiveness.
- **Cultural Diversity and Artistic Excellence:** Europe's rich cultural heritage and diverse artistic scene provide a unique source of inspiration for industries. By tapping into this cultural diversity, European companies can develop products and services that resonate with global audiences, differentiate themselves in the market, and enhance their competitiveness.
- **Digital Transformation:** CCS is at the forefront of the digital transformation, embracing new technologies and digital tools to enhance its creative processes and reach wider audiences. By leveraging digital innovations, European industries can improve their efficiency, expand their market reach, and stay competitive in the digital economy.
- **Skills Development:** CCS cultivates transferable skills such as creative thinking, problem-solving, teamwork, and resourcefulness. These skills are highly valuable in today's fast-paced and dynamic business environment, where adaptability and creativity are essential for staying competitive.

3.1.2 Economic and employment aspects

Below we outline an overview of the economic and employment aspects, growth rates, digital influences, and international dimensions of the cultural and creative industries in the EU⁷, which are pertinent to the socioeconomic landscape of the EU filmmaking industry.

- Economic Contribution of Cultural and Creative Industries (CCIs):
 - Total turnover of €643 billion and added value of €253 billion in 2019.
 - Represented 4.4% of EU GDP in terms of total turnover.
 - Economic contribution surpasses that of telecommunications, high technology, pharmaceuticals, or the automotive industry.
 - The estimated value of the EU creative economy was over €477 billion as estimated by the European Commission in the Annual Single Market report issued in 2021 (EC, 2021)⁸.
- Employment in CCIs:
 - Employed more than 7.6 million people in the EU-28 at the end of 2019.
 - Added approximately 700,000 jobs (+10%) since 2013.
 - In 2022, cultural employment in the EU grew by 4.5 % compared to the previous year.
 - In 2022, there were 7.7 million people in cultural employment across the EU, 3.8 % of the total employment⁹.
- Growth Rates in CCI Sectors (2013-2019):
 - Varied growth rates, with more than 4% per year for video games, advertising, architecture, and music.
 - Growth between 0.5% and 3% for audiovisual (AV), radio, visual arts, performing arts, and books.
 - Press sector suffered (-1.7%) due to the challenging transition between print and online revenues.
- Digital Experiences and Online/Offline Distribution:
 - Turnover generated by online cultural content, services, and works grew by 11.5% per year in the last six years.
 - Cultural enterprises have been pioneers in adopting digital technologies.
 - Challenges related to unbalanced relationships with global platforms and intermediaries on the internet.
- Internationalization and Entrepreneurship in CCIs:
 - The five largest EU-28 countries accounted for 69% of CCI total revenue, but the strongest growth came from Central and Eastern Europe.
 - In 2017, the EU exported €28.1 billion worth of cultural goods.
 - Over 90% of CCI companies are small- and medium-sized enterprises.
 - Revenues from the public sector accounted for only 10.8% in 2018.

The majority of companies within the CCIs are small or even tiny enterprises. Depending on the sector, the proportion of employment in Small and Medium Enterprises (SMEs) within CCIs can reach up to 83%, contrasting with their representation of 29% in total EU employment. Micro-enterprises play a crucial role in employment, constituting 83% of jobs in photography and 75% in design activities⁷. Moreover, the prevalence of freelance work is a characteristic feature of employment in CCIs. Approximately one-third of workers operate as freelancers, a rate twice as high as that observed in the broader EU economy (14%)⁷. This elevated freelance rate mirrors the project-based nature of CCI activities, defining the CCIs as a prototype economy. While freelance status provides workers with greater career flexibility, it also exposes them to increased vulnerability.

In EU, European films represent on average 62.52 % of releases and account for 32.9 % of admissions. Admissions to non-national EU films on the EU market are stable at around 12 % on average¹⁰. The dominance

of major international cinemas, such as Hollywood, Bollywood, Nollywood, and the Chinese industry, affects the distribution potential of national cinemas worldwide¹¹. This pervasive influence has substantial repercussions for EU filmmaking, impacting both the production and distribution of films on a global scale. The overwhelming supremacy of these major cinemas poses a challenge to the EU filmmaking sector, particularly in terms of competing with the widespread reach and influence of American products across the world.

This challenge has prompted the formulation of national and supra-national policies within the EU that aim to support and bolster the European audio-visual media landscape. Despite the production of a considerable number of films by EU nations, the global market dynamics remain largely under the control of these major international cinemas. Consequently, EU films face limitations in terms of distribution opportunities worldwide.

To enhance their distribution opportunities on a global scale, EU films can adopt several strategic approaches. Collaborative efforts with international distributors and platforms present a viable avenue for EU films to expand their reach and connect with a broader global audience. EU films, by forming partnerships, can tap into established distribution networks, thereby increasing their visibility and accessibility in international markets. The financial support system provided by the European Community, particularly through initiatives like the 'Programme MEDIA,' offers a valuable resource for EU films seeking to enhance their distribution efforts.

Another strategic approach involves boosting the presence and visibility of EU films in renowned international film festivals and markets. Active participation in these events can attract attention from distributors, industry professionals, and a diverse global audience. The exposure gained through film festivals enhances the reputation of EU films and improves their chances of securing international distribution deals. Overall, a multifaceted strategy that includes collaboration, financial support, digital adaptation, and festival engagement can significantly contribute to the global distribution success of EU films.

3.2 Digital Transformation in the EU Filmmaking Industry:

Advancements in filmmaking technologies have revolutionized the way films are conceptualized, produced, and distributed. This sub-chapter explores the adoption trends of cutting-edge technologies such as 3D modeling, artificial intelligence (AI), blockchain, and virtual/augmented reality within the EU filmmaking landscape. Understanding the prevalence and integration of these technologies provides crucial insights into the industry's forward trajectory.

Technology has had a deep impact on revolutionizing every aspect of filmmaking, from pre-production to post-production, from digital cameras, editing software, sound and music, distribution, and exhibition, to special effects^{11,12}. Technology has not only enhanced filmmaking processes but has also provided filmmakers with new creative possibilities and efficient tools. These advancements have significantly impacted the film industry's landscape, allowing for increased creativity, streamlined workflows, and expanded distribution opportunities. Lockdowns reinforced these digital transformation trends in the CCS and shifted attention to online cultural and creative activities, thus resources such as data and skills in digital technologies including AI have become highly valued¹³. Furthermore, the digitization of CCIs plays a significant role in fostering innovation, especially in the context of Industry 4.0 and advanced technological trends like Artificial Intelligence and the Internet of Things.

Innovation and digitisation in the CCS should be spurred by facilitating access of individual professionals and companies to new technologies and related (e.g. business, legal) services in clusters, research centres, maker spaces, fab-labs and creative hubs to make use of them in cross-collaboration projects, from research to market uptake. Latest technological developments such as AI, AR, IoT and 3D printing are definitely a field full of potential for the CCS in terms of content creation, modelisation, distribution and relation to audiences. Capacity should be built in the sector to engage successfully in collaboration with the tech industry⁶. The future of film technology holds exciting possibilities, with emerging technologies like Virtual Reality (VR), AI, and machine learning still in early stages of development.

Beyond production processes, there is a growing focus on sustainability, with eco-friendly practices and sustainable camera equipment gaining traction. CCIs have also embraced digital technologies from a marketing standpoint. In the performing arts, the use of data and the development of innovative

performance management methods have, for example, further streamlined the filling of theaters or museums¹⁴. The following paragraphs explore the different types of technological innovations that have emerged in recent years and what they offer creatives working within the film industry^{15,16,17,24,27}.

Technological developments in camera equipment have introduced innovative possibilities, such as dual-camera VR. This technology combines reality with virtual reality, enabling filmmakers to create a more immersive viewing experience by capturing characters and their surroundings separately. The use of 3D effects, Lucid cameras, and high-definition formats has transformed the visual experience of films. Filmmakers can now shoot 3D videos with 4K or 8K resolution, offering a more realistic cinematic experience. Digital tools in post-production have streamlined the process of adding digital effects to content, allowing for easier editing and integration of visual and audio elements. This contributes to faster and more efficient film editing. AI tools, including AI-powered screenwriting, have become valuable assets in the creative process. While AI-generated dialogue and screenplays are emerging, they also serve as prompts for new ideas, accelerating the creative process. The use of 3D previsualization allows filmmakers to create and display digital content with 3D software, providing a preview of physical sets during pre-production. This minimizes errors and enhances collaboration among stakeholders. Adapted from video games, real-time rendering ensures that graphics can be manipulated during production rather than solely in post-production, contributing to a smoother workflow. IoT solutions are integrated into film sets, supporting crew monitoring, equipment tracking, and enhancing the audience's viewing experience with personalized, location-aware content. Machine learning analyzes large datasets, aiding in areas such as past box office sales and personalized recommendations on streaming platforms, enhancing audience engagement. Advancements in technology facilitate remote filmmaking, eliminating the need for physical film stock and expensive post-production equipment. Filmmakers can shoot, edit, and distribute their work using readily available digital tools. Augmented reality enhances the viewing experience by superimposing images onto real objects, paving the way for more interactive and personalized filmmaking. The film industry has progressed from 3D to 7D or 8D movies, offering viewers a multi-dimensional experience with computer-controlled effects.

Digital technology has not only revolutionized how films are made but has also transformed the way audiences access and view films. Over-the-Top (OTT) platforms like Amazon and Hulu enable filmmakers to directly reach audiences outside traditional cinemas, expanding distribution opportunities with minimal additional costs.

With regards to the 3D modelling Neural Radiance Field (NeRF)^{18,19,20} has marked a significant breakthrough in Computer Vision, allowing for implicit, neural network-based scene representation and novel view synthesis. In parallel, the emerging technology of 3D Gaussian Splatting (3D GS)^{21,22,23} presents a transformative technique, utilizing explicit radiance field representations with millions of 3D Gaussians. NeRF operates as a fully-connected neural network generating 3D models from multiple viewpoints, while 3D GS diverges by introducing explicit scene representations and differentiable rendering algorithms. These innovations collectively offer a leap forward in the realm of 3D reconstruction and representation.

In the context of the EU filmmaking industry, the synergy between NeRF and 3D GS introduces novel possibilities for visual storytelling. NeRF's ability to generate immersive scenes and 3D GS's promise of real-time rendering converge to enhance the filmmaking process. For instance, the integration of these technologies could revolutionize the creation of realistic virtual sets, enabling filmmakers to visualize and manipulate scenes in real time. This dynamic approach not only streamlines the production process but also opens avenues for interactive media experiences, VR applications, and beyond. The marriage of NeRF and 3D GS stands as a potent force in pushing the boundaries of visual effects and scene representation, offering filmmakers powerful tools to bring their creative visions to life with unprecedented levels of realism and control.

AI plays an essential role in virtual film production by assisting in the creation of realistic and immersive digital environments²⁴. AI is employed to generate diverse content, including landscapes, architecture, and vegetation, enabling swift creation of digital environments by filmmakers. Additionally, machine learning comes into play for analyzing and monitoring the movements of objects and actors within a virtual set, ensuring the creation of scenes that are both realistic and natural by orchestrating lifelike interactions.

Furthermore, AI contributes to the filmmaking process by capturing real-time movements of actors and objects, recording motion data that facilitates more precise animation of digital characters and objects. In

the domain of special effects and lighting, AI's capabilities shine, generating intricate effects that would pose challenges using traditional methods. The application of AI extends to rendering high-quality images and footage in real-time, providing filmmakers with the ability to promptly preview and refine their digital environments and scenes. Leveraging the power of AI, filmmakers can now intricately design and construct digital sets that are not only highly detailed but also remarkably convincing and dynamic. Throughout every stage of filmmaking, AI proves to be a valuable tool. For instance, filmmakers can utilize AI tools to craft 3D models of characters and props for virtual production. From streamlining production processes to assisting in decision-making, AI is becoming a crucial tool in movie production, helping increase productivity and efficiency²⁵.

AI tools are used to automate various simple, often repetitive tasks at the production and post-production stages, this in turn frees up time for experts to focus on more complex parts of their activities¹³. Therefore, AI can contribute to lowering costs, faster production times and help smaller teams produce high-quality movies at low budgets²⁶. AI is very powerful in analysing large-scale data, recognising trends and revealing valuable insights. With the introduction of digitally consumed cultural and creative productions, tech firms, online platforms and CCS can collect previously unknown information about the use of their content¹³. The machine learning algorithms assist in predicting a movie's success and analyzing audience feedback, empowering filmmakers to tailor their productions to align with the preferences of their target audiences¹². The latter can be combined with data leveraged from social media. Social media platforms have proven to be powerful instruments, exerting significant effects on film promotion, audience engagement, and even the creative aspects of filmmaking²⁷. Departing from traditional reliance on billboards and TV commercials, filmmakers and marketing companies now directly engage audiences through various social platforms. This involves the creation of dedicated social media pages featuring unique viral content, the sharing of captivating trailers, the implementation of targeted ad campaigns, and the establishment of vibrant communities around their film projects. Social media has become an invaluable tool for filmmakers, allowing them to harness its power to generate buzz and cultivate anticipation for their cinematic endeavors.

Social media's impact extends beyond mere promotion, reaching into the democratization of the filmmaking process itself. Through social media platforms, a filmmaker may encourage active audience participation through crowdsourcing, enabling the direct involvement in diverse stages of the creative journey. From scriptwriting and casting decisions to funding initiatives and marketing strategies, audiences can now play a direct role in shaping the cinematic narrative. By tapping into the collective wisdom of the crowd, filmmakers gain access to a broader spectrum of ideas and resources, fostering enhanced audience engagement and elevating overall production values. Social media's role in crowdsourcing not only transforms the creative landscape but also strengthens the bond between filmmakers and their audience.

The key trends imposed in the industry by the technological advancements include:

- The rise of streaming services (Netflix, Amazon Prime, Disney+, etc.)²⁸.
- The integration of Artificial Intelligence and Machine Learning to provide insights into audience preferences, predict box-office performance, streamline manual pre-production efforts, script analysis and contribute to the generation of unique content^{29,30}.
- Leveraging social media in Film Production²⁷ to tap into the collective wisdom of the crowd, accessing a diverse array of ideas and resources. Social media has become the driving force behind generating buzz and building anticipation for upcoming projects.
- Discover new realms of storytelling by embracing VR and AR^{31, 27}. These technologies, designed to deliver immersive and engaging experiences, transport viewers into virtual environments or overlay digital elements onto the real world.
- Lighting, audio and Scene Exploration^{29,30} using AI-powered tools. Users can realistically simulate lighting setups and sound design to enhance the mood, atmosphere, and/or tone. Furthermore, integration of these tools with Unity and Unreal engine enables filmmakers to digitally simulate actual physical spaces.
- Unreal Engine 5.2 for virtual productions. This offers a dynamic and adaptable solution to traditional set design challenges. Filmmakers can design complex virtual sets, visualize scenes in real-time, and make last-minute changes during filming²⁷.

In conclusion, the trend analysis highlights the dynamic shifts and significant transformations taking place in the film industry, driven by digital advancements and emerging technologies. Streaming and on-demand

platforms have revolutionized film consumption, and SCENE's focus on AI and machine learning resonates with the industry's integration of these technologies in casting, editing, and marketing. Advancements in data collection and analytics will empower filmmakers to gain deep insights into audience preferences and behavior. This data-driven approach will inform decisions related to storytelling, casting, marketing, and distribution, leading to personalized content that resonates with specific target audiences. Leveraging social media in film production is a crucial trend, influencing marketing strategies, audience engagement, and even the creative process. SCENE's emphasis on audience participation and collaboration aligns seamlessly with the democratization of filmmaking through social platforms.

Technological innovations, such as VR, AR, and advancements in camera technology, are reshaping film production, offering new realms of storytelling. SCENE's incorporation of 3D models in the Unreal Engine aligns with the industry's shift towards virtual production, providing dynamic and adaptable solutions to traditional set design challenges. Moreover, AI-powered graphic tools in lighting and scene exploration contribute to sustainable filmmaking by recommending energy-efficient solutions, enhancing planning efficiency, and providing powerful tools for crafting compelling visual narratives.

Digitization and media convergence create new opportunities for access, distribution and promotion of European works and it's important to guarantee funding for the digitization, preservation and online availability of European cultural heritage³². Some of the implications of digital tools on the EU filmmaking industry are³³:

- AI-generated content challenges authorship, ownership, and copyright infringement. A central question concerns the notion of originality.
- New exclusive rights on datasets must be designed in order to better incentivize innovation and research.
- European cultural institutions have rich datasets of cultural artifacts that could be made accessible to a larger audience. AI has the potential to create rich ways for users to navigate through cultural content.
- Good practices in AI for cultural heritage accessibility need to be formalized and shared among the European cultural networks.

Furthermore, to respond to the lack of evaluation tools showing the impact of the CCS in industry, monitoring and evaluation indicators should be developed by the European Commission Joint Research Centre, universities, or competent research centers⁶. A creative spill-over agenda targeting notably B2B relations within the overall supply chain is the opportunity to associate European-grown creative talents in innovation processes⁶.

The richness of European languages becomes a significant factor when implementing or introducing AI-based tools, as the application of artificial intelligence in CCS heavily relies on language-related aspects (natural language processing, natural language understanding, speech technologies, language-centric AI). Numerous prevalent opportunities in AI are linked to language, encompassing data analytics through text, AI-aided cataloging, and the examination of user trends. Language Technologies, a comprehensive category of computational methods for integrating speech and text, constitute a pivotal component of this landscape. There is an identified need for language technologies "made in Europe, for Europe"¹³.

The strike of the Writers Guild of America (WGA) between May and September 2023 raised concerns about the potential use of AI, such as ChatGPT, to replace screenwriters. Despite the strike, AI's potential to change filmmaking is being acknowledged³⁴. AI offers benefits in storytelling and script analysis by providing insights into plot structure, character development, and dialogue. It enhances pre-production planning through streamlined location scouting, virtual visualizations, and improved efficiency. AI revolutionizes video editing and post-production by automating tasks, including scene detection, color matching, and audio cleanup. Real-time VFX integration powered by AI simplifies the complex task of seamlessly incorporating visual effects and CGI into live-action scenes. Finally, AI enables personalized audience engagement and marketing by analyzing vast amounts of data to recommend films based on individual preferences, leading to more effective audience engagement and increased ROI for film production companies.

CCS in general is confronted with the challenge of how to find new ways to monetize their content and

reach out to digital-minded and increasingly digital-native audiences in innovative ways¹³. The influence of AI is heavily contingent on the specific algorithm it utilizes and the data employed for training the system. The AI system will take forward any initial bias and even reinforce them. If embedded in algorithms and not managed properly, this could lead to limited diversity in curatorial and research outputs³⁵.

AI is raising apprehensions regarding the standardization of preferences, as observed in various sectors like news media, book publishing, film, and visual art. AI has the potential to create "filter bubbles"³⁶ where intelligent algorithms cater to users' preferences, potentially limiting exposure to diverse perspectives and reducing common ground within the community. Personalized searches, driven by past user interactions, may confine individuals to a specific content type, contributing to a homogenized worldview. In the realm of news media, this phenomenon can lead to societal fragmentation, hindering decision-making based on shared and comparable information³⁷. Apart from filter bubbles, there is a concern that AI misuse may restrict artistic expression by promoting monopolized products in the market. For instance, in architecture, the excessive use of similar AI tools for aesthetic enhancements may lead to a homogeneity of works, limiting diversity.

Some stakeholders highlighted the potential risk of an increase in substandard content, such as 'low-value' journalism and low-quality functional music, due to the implementation of AI curation or generation techniques¹³. Inaccurately calibrated recommendation systems may expose users to a plethora of promoted content lacking artistic quality, authenticity, or environmental consideration, deviating from the promised 'personalized content.' The promotion of inferior games, films, sounds, or news items could adversely impact cultural standards and quality of life. Concerns exist in the film sector that AI technology might lead to a standardization of future films. Moreover, artists collaborating with technology to create art may become reliant on specific technology or algorithms controlled by companies that can alter or remove functionality at their discretion, posing artistic risks¹³.

Despite acknowledging these risks, earlier studies indicate that the adoption of new technologies doesn't necessarily result in cultural decline, and creative professionals often respond in non-linear and complex ways, fostering the emergence of new creative activities^{38,39}.

Related to the fragmentation of languages, an issue is the development of curation technologies. Although data curation is one of the fundamental aspects of machine learning, Europe's competitiveness suffers from significant fragmentation of stakeholders and providers of curation technologies¹³. This issue is recognized, and the EU launched the European AI on Demand Platform⁴⁰ to support innovation, offering a critical mass of resources.

The opportunities and benefits of AI in the CCIs by area of impact are presented in Table 1, it is essential to balance innovation with fairness, transparency, and inclusivity to create a sustainable and diverse cultural and creative landscape.

Table 1: The opportunities and benefits of AI in the CCIs by area of impact.

Area of Impact	Opportunity	Benefit
AI Startups Specialized in CCIs	Can anticipate disruptive technological trends and create innovative solutions	Can introduce new tools and technologies, challenging traditional models and creating opportunities for novel revenue streams within the cultural and creative landscape.
Digital Service Providers/Digital Distributors	Established digital service providers and distributors like Spotify, YouTube, Netflix, and social media platforms can leverage accumulated user data for AI applications.	These platforms can develop and market AI-based tools and services, capitalizing on winner-takes-all effects and enhancing user experience through personalized content recommendations.
Independent Filmmakers and Artists	Online platforms empower independent filmmakers and artists to connect directly with	Can bypass traditional production companies, changing the dynamics of the industry.

	their audience, reducing reliance on traditional intermediaries.	
Licensing Proprietary Content and Tools	Larger players in CCS can build their own in-house AI, creating opportunities for licensing proprietary content and ready-made tools.	Smaller publishers lacking resources can access and utilize advanced AI technologies, fostering innovation and ensuring a competitive edge in content creation.
Easier Creative Content Production	Digital tools and AI simplify content production, reducing the need for extensive professional and technical training.	This trend may weaken the position of traditional studios, but it creates a demand for professional production engineers, ensuring continued opportunities for skilled professionals.
Emergence of 'Prosumers'	AI is expected to blur the lines between consumers and producers, creating a new class of 'prosumers.'	Online platforms and AI-supported tools enable non-professionals to create high-quality content, expanding the creative landscape and fostering a growing market of 'prosumers.'
Cross-Industry Application of Creative Content	AI-assisted curation and content creation extend beyond CCIs, finding applications in retail, hospitality, marketing, and advertising.	Creative content can be repurposed and applied in new ways, opening avenues for collaboration across diverse industries and expanding the reach of cultural content.
Innovation Ecosystems and Technological Development	Innovation companies play a crucial role in enhancing technological development and building innovation ecosystems.	Collaboration between innovation companies and CCIs can lead to the creation of quality solutions, fostering a mutually beneficial relationship and promoting technological advancements.
European AI Tech Startups	A strong base of AI startups in Europe can reduce dependency on non-European tools and data.	Building a robust ecosystem of AI startups ensures access to quality solutions, contributing to the overall advancement of CCIs in Europe and reducing reliance on external technologies.
Transparency and Fairness Advocacy	Advocacy for transparency in the relationship between AI technologies and CCIs.	Ensuring fairness, preventing monopolization, and promoting transparency in data usage can create an environment where all stakeholders, including smaller players, can thrive and contribute to the industry's growth.

3.3 Policy Framework for Enhancing Competitiveness in the EU Filmmaking Industry.

3.3.1 Policy landscape

This chapter delves into the intricate web of policies shaping the EU filmmaking industry. Policies play a crucial role in influencing the competitiveness, sustainability, and innovative capacity of the sector. The analysis seeks to unravel the existing policy landscape. This includes also national and EU-level policies that cover aspects such as funding mechanisms, copyright regulations, and support for cultural diversity. Understanding the existing policy context is fundamental for proposing meaningful recommendations to enhance the industry.

In film policies, it is imperative to place the audience, whether it be a broad or specialized demographic, at the forefront, aligning with the creative process. This principle should be integrated into every stage of

filmmaking, from initial development to the point of exploitation. Analogous to other cultural domains, the formulation of strategies and tools becomes crucial. These tools should not only enhance accessibility but also stimulate the demand for European films, particularly those outside the national spectrum⁴. The active involvement of audiences throughout the creation and distribution phases stands as a pivotal factor. Gaining insights into audience preferences and consumer behavior is instrumental in identifying and targeting elements contributing to a film's success.

Additionally, there is a vital requirement to enhance the visibility and discoverability of European films while actively engaging audiences⁴. Tailoring approaches to individual projects is essential, but fostering the exchange of experiences and establishing common tools, such as apps, web services, and branded events, can amplify the effectiveness of endeavors aimed at identifying and targeting European cinema's audience. Given the rapid transformations within the sector, there is an urgency to instigate a European discourse and initiate a dialogue involving all stakeholders, both public authorities and the private sector, concerning film policy in Europe. This discourse should be centered on shared objectives, including enhancing accessibility to the diverse array of European films for audiences and bolstering the competitiveness and profitability of the film industry⁴.

To this end, the Commission intends to launch a European Film Forum, a process building on existing instruments, aiming at promoting the exchange of experience and practices, and the studying and sharing of knowledge on issues of common interest. The focus of the Forum should be to debate public policies for the film sector. This process will seek to involve, on a voluntary basis, interested parties at the European level and will be conducted in full transparency to the benefit of the whole sector⁴.

With regards to European film heritage, Europe is lagging in terms of digitization, which is a precondition for digital access. Only 1.5 % of film heritage has been digitized. This is explained by a lack of funding and high costs, both in money and time, for clearing rights. The simplification of rights clearance could facilitate the process including through a reduction of costs⁴.

The regulatory framework plays an important role in shaping the business environment for the film sector. The copyright framework and media and content regulation are particularly important in this respect. Europe needs to nurture talents and develop professional skills in the European film industry. This is imperative for the quality, diversity and originality of European films and are crucial assets for attracting audiences and strengthening competitiveness⁴¹.

Cooperation among European film schools (on curricula or mobility) and creative partnerships between schools and businesses are to be encouraged. The objective should be to promote a better match of training and skills with the needs of the industry (including entrepreneurial, ICT, advertising and marketing skills). It should also aim to bring a more international and global audience perspective to the creative part of the industry⁴¹. There is also a call to the Commission to comply with Article 167(4) of the Treaty on the Functioning of the European Union and establish the CCIs, as part of the CCS, as a horizontal priority within EU funding schemes and programmes, particularly in Horizon 2020, EaSI and the ESIFs⁴¹.

The 2017 renewed EU Industrial Policy Strategy provides a flexible comprehensive policy and action framework to address cross-cutting challenges and opportunities for the modernization of EU industry, including the cultural and creative sectors⁶. In January 2021 the commission managed to increase the budget for the new Creative Europe program (2021-2027) to €2.2bn, a 50% increase compared to the previous program. Other supporting instruments like Erasmus+ at €26bn and Horizon Europe, particularly Cluster 2 on Culture, Creativity, and Inclusive Society at €2.3bn⁷.

The key proposals outlined in the impulse paper on the role of cultural and creative sectors in innovating European industry⁴² are:

- Incentives and Support Tools: Policies that aim to provide incentives and support tools to encourage cross-sector collaborations between CCSs and other industries. These incentives include funding opportunities, networking events, physical and online spaces for collaboration, and support for new players in the ecosystem.
- RIS3 Integration: CCS are being included in Regional Innovation Strategies for Smart Specialization (RIS3) to unlock funds and move beyond traditional cultural policy silos. This integration aims to take an economic and innovation approach to CCS and creative technologies, fostering collaboration and innovation across sectors.

- Creative Hubs and Clusters: Creative hubs, incubators, accelerators, and clusters are identified as key players in supporting the integration of cultural and creative sectors into industrial innovation strategies. These entities provide a supportive environment for new players and facilitate collaboration between different sectors.
- STEAM Education and Skills Development: Initiatives are being proposed to nurture human capital and knowledge base in Europe by promoting STEAM education (Science, Technology, Engineering, Arts, and Mathematics). This approach aims to equip individuals with problem-solving and creative thinking skills essential for the future of work, where a combination of creative and technical skills is increasingly valuable.⁴³
- Open Innovation Framework: Efforts are being made to embed open innovation practices within the cultural and creative sectors. By fostering collaborative research between creative companies and research entities, the Cultural and Creative Industries Clust-ER in Emilia Romagna, Italy, is bridging innovation needs and promoting open innovation within the CCS.
- Policy Support: Policies that promote CCS-friendly innovation strategies are considered crucial incentives for individual professionals, companies, and creative business support organizations in the cultural and creative sectors. Such policy support can drive innovation, collaboration, and growth within these sectors.

All in all, the policy recommendations for the EU filmmaking industry are aimed at:

- Establishing a regular dialogue between cultural and creative sectors and industrial stakeholders to foster collaboration and innovation.
- Recognizing the value of CCS in generating high-quality products and services with cultural meaning in the experience economy.
- Leveraging Europe's cultural diversity and artistic creativity to address economic and societal challenges through relevant innovations.
- Embracing the digital transformation by harnessing the power of interconnected thinking and multidisciplinary innovation to enhance Europe's competitiveness on the global stage.

Furthermore, in the European Parliament resolution of 13 December 2016⁴⁴, a call was expressed at the commission to develop a comprehensive, coherent and long-term industrial policy framework for the CCS, and on the EU to include the development, effective promotion and protection and adequate funding of CCIs in its strategic goals and overall priorities, in order to boost their competitiveness and enable them to fulfil their potential in terms of creating quality jobs and growth.

Movie studios and distributors find themselves at a pivotal juncture, compelled to reassess time-honored business models in response to the profound impact of the COVID-19 pandemic^{27,28,30}. Two discernible trends have been accelerated: an increasing preference for home-based entertainment, and a surge in studios and media distributors establishing their direct-to-consumer streaming services. While theaters grapple with diminished attendance due to stay-at-home norms, studios face challenges such as halted productions, postponed premieres, and the need to explore direct-to-consumer avenues for income generation. The COVID-19 pandemic has accelerated the reimagining of business models, emphasizing a preference for home-based entertainment and direct-to-consumer streaming services. Furthermore, the pandemic highlighted the need for collaborative tools, platforms and repositories for remote production workflows.

The film industry will increasingly adopt greener practices, focusing on reducing carbon footprints, minimizing waste, and embracing eco-friendly production techniques to contribute to a more environmentally conscious future. One of the most notable measures taken by several film funding institutions in Europe is the adoption of Green production policies (also referred to as Green or sustainable shooting/filming)⁵⁹. Concerning funding organizations, promotion typically involves the distribution of funds specifically designated for supporting sustainable and eco-friendly production expenses and/or the granting of environmental certification and filming permits. Projects adhering to the guidelines for environmentally-friendly shooting provided by the Hamburg Schleswig-Holstein Film Fund may be eligible for a Green Shooting Card, streamlining the process for obtaining a shooting permit in the respective region⁴⁵.

Implementing sustainable and eco-friendly practices in filming involves following specific guidelines and toolkits^{28,29}. These measures span various stages of production and post-production and are directed towards

different participants, including directors, actors, technicians, extras, and suppliers. Best practices cover a broad spectrum of production activities, offering valuable advice on:

- Logistics, encompassing energy, shooting locations, catering, accommodation, transportation, and waste management.
- Production-related activities, including set construction, decorations, equipment, props, wardrobe, and makeup.

Screen Ireland⁴⁶ has developed a Green Production Toolkit as an example of creating environmentally-friendly production, providing comprehensive information across different production phases. The Netherlands Film Fund produces filmed reports showcasing green production practices and encourages professionals to share their experiences through photos, videos, and documentation on the fund's platform⁴⁷. Additionally, the fund has a Sustainability Manager working with the Green Film Making foundation, organizing workshops where industry professionals share eco-friendly practices.

Several networks in Europe focus on sharing experiences and initiatives related to sustainable film production:

- Green Screen⁴⁸, an Interreg Europe⁴⁹ project, aims to reduce the environmental impact of film and TV production by promoting best practices and encouraging the adoption of green measures.
- The European Film Commissions Network (EUFCN)⁵⁰ and Cineregio's Green Regio⁵¹ work towards fostering sustainable film production by sharing green filming experiences among their members and conducting EU-funded projects.
- The Vlaams Audiovisueel Fonds (Flanders Audiovisual Fund, VAF) has been focusing on sustainable production since 2013 by using funding as leverage towards sustainability and by raising awareness amongst film professionals, helping them to support the Flemish policies on energy, sustainability and the environment⁵². The e-Mission project showcases collaborative efforts between film commissions, public institutions, and the film industry to promote sustainability⁵³.

Lastly, the industry will witness a continued emphasis on diverse and inclusive storytelling, representing underrepresented communities and showcasing diverse cultures, backgrounds, and perspectives²⁹.

3.3.2 Funding Mechanisms and Support Programs

This chapter delves into the landscape of funding mechanisms and support programs that underpin the EU filmmaking industry. Understanding the financial ecosystem is important for recognizing the sources of support available to filmmakers, both from the public and private sectors. The analysis aims to shed light on the effectiveness of existing mechanisms.

Addressing the challenges of accessing private financing for film enterprises, particularly in the context of uncertainties linked to production, involves leveraging financial engineering instruments such as guarantee funds. Initiatives like the Creative Europe guarantee facility for cultural and creative sectors, along with other EU financial instruments, aim to facilitate access to private financing through loans⁵⁴. This encompasses business development, investments, and fostering innovation in content creation, delivery, and the reuse of film archive material.

The Creative Europe program offers financial support for film projects through its MEDIA sub-program⁵⁵. Within the MEDIA sub-programme, efforts focus on supporting development, distribution, and theatrical exploitation. This includes exploring opportunities in the digital environment, especially in reaching wider audiences. Newcomers in the value chain, particularly emerging VoD platforms like Netflix, raise questions about evolving financing models and their potential role in supporting diverse audiovisual content.

Table 2 below presents some key information of the Creative Europe program⁵⁴.

Table 2: Details on the Creative Europe Programme.

Program	Creative Europe
Budget	€2.44 billion (2021-2027), a significant increase from the previous program (2014-2020) with €1.47 billion.

Objectives	Safeguard, develop, and promote European cultural and linguistic diversity and heritage. Increase the competitiveness and economic potential of the cultural and creative sectors, especially the audiovisual sector.
Strands	<ol style="list-style-type: none"> 1. Culture Strand supports various cultural and creative sectors, including architecture, cultural heritage, design, literature, publishing, music, and performing arts. Encourages cooperation and exchanges among cultural organizations and artists within Europe. 2. MEDIA Strand focuses on supporting and promoting Europe's film and audiovisual industries. Encourages collaboration across the audiovisual industry's value chain, nurtures talents, supports innovation, and engages audiences of all ages. 3. Cross-sectoral Strand reinforces collaboration between different cultural and creative sectors (CCS) to address common challenges and find innovative solutions. Priorities include supporting cross-sectoral transnational policy cooperation and encouraging innovative approaches across CCS.
Creative Innovation Labs	Encourages innovative approaches to content creation, access, distribution, and promotion across cultural and creative sectors. Aims to incentivize players to design and test innovative digital solutions, creating tools, models, and methods for the audiovisual sector and another cultural or creative sector.
Clusters	<p>Content Cluster: Focus on the creation of diverse and high-quality content.</p> <p>Business Cluster: Enhance the economic potential of the cultural and creative sectors.</p> <p>Audience Cluster: Engage audiences of all ages.</p> <p>Policy Support Cluster: Support policy cooperation and awareness raising.</p>

National film funds in European countries provide financial support to local filmmakers⁵⁴, such as the German Federal Film Fund (DFFF)⁵⁶ and the French National Center for Cinema and the Moving Image (CNC)⁵⁷.

Table 3: Details on the German Federal Film Fund.

Fund	German Federal Film Fund (DFFF)
Initiative	An initiative by the Commissioner for Culture and the Media (BKM) to strengthen film production in Germany. Administered by the German Federal Film Board (FFA).
Eligibility	For feature, documentary, or animated films produced in Germany. Minimum 25% of the budget spent in Germany. Grants up to 20% (or up to 25% based on German spending) of approved costs.
Application Submission	No specific deadlines; submissions accepted at any time. Application must be received at least six weeks before the start of principal photography.
Consultation	Required before every application. Advises on eligibility and can help clarify questions, potentially reducing processing time.
Application Process	Single punched copy submission. Application form provided by funding consultants following consultation. Must include costing sheet, cultural characteristics test, and script.
Finance Requirements	75% of financing need not be in place during submission but required upon grant notification. Allows amendments until then.

DFFF in Figures (2019)	<ul style="list-style-type: none"> • DFFF I: 97 approvals with total production costs of €377.91 million. • DFFF II: 7 approvals with total partial production costs of €240.50 million. • International co-productions: 33 projects with €163.42 million costs. • German productions: 64 projects with €214.48 million costs. • Animation films: 6 projects with €40.06 million costs. • Documentary films: 24 projects with €15.87 million costs. • Feature films: 67 projects with €321.98 million costs.
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Table 4: Details on the French National Center for Cinema and the Moving Image.

Fund	French National Center for Cinema and the Moving Image (CNC)
Initiative	Created in 1946, the CNC is an independent public organization under the Ministry of Culture and Communication.
Core Activities	Regulation, production, and distribution support for audiovisual works; Preservation and promotion of cultural heritage; Financial support for the preservation of works and cultural heritage projects.
Audiovisual Support	Policy to support the promotion and distribution of works; Special grants system for cinema access and wider audience reach; Development of export and promotion of French film and television globally.
Regulatory Role	Participation in the study and drafting of national regulations. Control of their application in the film, television, video, and multimedia industry.
International Engagement	Development and implementation of multilateral policies for the film and broadcasting sector. Engagement at European (EU, Council of Europe) and international levels (WTO, OECD, UNESCO, etc.).
Financial Support	Funding from a system of taxes, including TSA (10.72% of cinema ticket price), TST (5.15% of publishers' revenue), and TSV (5.15% of turnover for physical and digital distribution of audiovisual content).

Co-production is a funding model used as early as the 1920s and European cinema has utilized this measure as a strategy to ensure distribution throughout the continent, and as a means of accruing production funding through various state and private-sector funding outfits⁵⁸. SCENE’s policy landscape analysis included an examination of international funds, multinational schemes, co-production schemes, and co-development funds. These funds and schemes represent diverse models of collaboration and financial support within the audiovisual industry, playing a crucial role in fostering cross-border partnerships, encouraging cultural exchange, and advancing the development of high-quality film and TV content. This was to understand the structures, objectives, and operational criteria of these mechanisms and gain insights into the varied approaches employed by countries and regions to enhance their audiovisual landscapes. This understanding is essential for policymakers, industry stakeholders, and researchers seeking to navigate the complexities of international collaboration, co-production agreements, and support mechanisms.

International funds play a crucial role in fostering collaboration and supporting audiovisual projects across multiple countries⁵⁹. These funds, such as the Nordisk Film and TV Fond (NFTVF)⁶⁰ and Ibermedia⁶¹, are established through collaboration between several national or federal entities, including film funds. They aim to promote the production of high-quality films and TV content within specific geographical regions, strengthening ties and increasing cultural awareness.

Multinational schemes, on the other hand, are mechanisms that involve both national and regional film funds from different countries, setting aside resources for international co-production projects. Co-production schemes are more frequent and involve collaboration between national and/or regional film funds to fund international co-productions. The German-French Mini-Traité⁶² is an exemplary case, where production companies from Germany⁶³ and France⁶⁴ submit simultaneous applications, and the resulting projects must

comply with the co-production agreement's criteria, ensuring a general balance in artistic, technical, and financial contributions. By 2015 the new German-French development fund had a budget of €200,000 per year to foster common projects by newcomers in the two countries with a maximum sum per project at €50,000^{65,66}.

Co-development funds are designed to support the pre-production stage of projects, including theatrical films, audiovisual works, and new media projects. These funds, such as the Greater Region Cross-Border Co-Development Scheme⁶⁷, an agreement between three national film funds and three regional film funds in the Benelux and Germany⁶⁸ encourage collaboration between national and regional film funds to strengthen cross-border audiovisual cooperation. Eligible projects must demonstrate the potential for commercial exploitation or broadcasting in specific languages within the designated geographical region, promoting cultural exchange and fostering innovation in the audiovisual industry.

Other co-production funds like Eurimages⁶⁹ support international co-productions involving European countries, facilitating cross-border film financing. Eurimages has a clear cultural aim and is complementary to the Media programme of the European Union, which has an industrial goal. Eurimages has four support schemes: feature film co-production, the promotion of co-production, theatrical distribution (to be suspended as from the 2020 cycle in its current form) and exhibition. Eurimages promotes independent filmmaking through a number of collaboration agreements with various festivals and film markets and has also adopted a strategy to promote gender equality in the film industry. Eurimages has also adopted a strategy to promote gender equality & diversity and sustainability in the film industry.

The Table 5-9 present key details of these schemes, such as their establishment, geographical scopes, primary objectives, notable achievements, application process, eligibility, contribution share, and evaluation criteria.

Table 5: Details on the Nordisk Film and TV Fond.

International Fund	Nordisk Film and TV Fond (NFTVF) ⁶⁰
Establishment	1990
Geographical Scope	Denmark, Finland, Iceland, Norway, and Sweden
Primary Objective	Promote film and TV productions of high quality in the five Nordic countries ⁷⁰ .
Results in 2018	104.1 million NOK (Norwegian Krone) awarded in funding in 2018; 115 projects supported, including feature films, TV-drama, documentaries, distribution, and cultural initiatives.
Main Actions	Production funding for feature films, TV fiction/series, and documentaries; Distribution funding; Funding for strategic development (e.g., Nordic Genre Boost) and Special Initiatives; The Nordic Council Film Prize.
Criteria for Production Support	Applicant must be a production company from one of the five Nordic countries, an EU, EEA, or Switzerland member state, or legally established in one of the five Nordic countries. Creative driving forces must have a significant link to Nordic audiovisual culture. Theatrical distribution guaranteed in at least two Nordic countries. One of the fund's broadcasters must be involved. Project must prove significant audience potential in the Nordic and global market.

Table 6: Details on the Ibermedia.

International Fund	Ibermedia ⁶¹
Establishment	Created in 1997

Geographical Scope	The programme involves 23 member countries and observers of CACI, which fund it: Argentina, Bolivia, Brazil, Colombia, Costa Rica, Cuba, Chile, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Portugal, Puerto Rico, Dominican Republic, Spain, Uruguay and Venezuela, plus Italy.
Primary Objective	Create an Ibero-American audiovisual space by means of financial aid to independent film producers from the member countries.
Results in 2018	115 projects supported in 2018; 52 coproductions, 52 projects for development, 11 for training projects.
Main Actions	Provides financial aid and organizing open calls accessible to independent film producers from its member countries; Promotes the co-production and co-development of fiction, documentary, and animated films and series; Facilitates collaboration through its networks for co-productions; Conducts workshops, awards scholarships, organizes seminars; Promotes the use of new technologies.
Criteria for Production Support	The projects submitted must be co-productions between at least two independent producers belonging to different participating states of the Fund. Bilateral co-productions must be made by Italy and a Latin American country which participates in the IBERMEDIA programme. Multilateral productions must be made with at least two countries that participate in the IBERMEDIA Programme, and one of these must be a Latin American country. Co-productions must be made with the technical and artistic participation of at least one Latin American country. This participation must be proportional to the economic, direct, or equivalent contribution of the national producer from that country. Training programs must be accessible to professionals from all the Ibero-American countries plus Italy. Applicants must guarantee that the majority of IBERMEDIA grantees participating in training activities come from countries other than where the program is taking place ⁷¹ .

Table 7: Details on the German-French Mini-Traité.

Co-Production Scheme	German-French Mini-Traité ⁶² .
Establishment	2001
Geographical Scope	Germany and France
Primary Objective	Renew and strengthen French-German cooperation in film production; Contribute to and support the artistic quality of co-productions; Achieve a balanced partnership/equal number of majority co-productions between both countries.
Endowment	EUR 3.2 million annually, contributed equally by Germany and France.
Application Process	Simultaneous submissions by German and French producers to FFA and CNC.
Criteria for Production Support	The projects submitted must be co-productions between at least two independent producers
Eligibility	Production companies in either of the two countries.

Contribution Share	Each co-producer's share must be between 20% and 80% of the final cost.
Co-Production Agreements	Possible with states bound by film co-production agreements with France or Germany.
Evaluation	Franco-German commission assesses artistic, technical, and financial contributions.
Support Limit	EUR 500,000 (EUR 300,000 to the majority producer), up to 20% of the final cost.
Performance (2001-2012)	113 grants awarded out of 199 applications; 54% French majority co-productions, 43% German majority co-productions; 76% of films released in both countries, with 28.8 million tickets sold by 2013.

Table 8: Details on the Greater Region Cross-Border Co-Development Scheme.

Co-Development Funds	Greater Region Cross-Border Co-Development Scheme ⁶⁷ .
Establishment	2015
Geographical Scope	Greater Region (Luxembourg, Région Grand Est, Saarland, German-speaking Community of Belgium).
Primary Objective	Strengthen cross-border audiovisual and film cooperation, encourage co-productions.
Budget (2019)	EUR 60,000
Criteria for Production Support	At least two co-producers, one from the Greater Region and one from a different country. Support for theatrical and TV feature and medium-length projects, and new media projects. Projects must have potential for commercial exploitation or broadcasting in German, French, or Luxembourgish. Must prove potential to be carried out or shot in the Greater Region.

Table 9: Details on the Eurimages fund.

Co-Development Funds	Eurimages
Establishment	Eurimages, established in 1989, serves as the cultural support fund of the Council of Europe. It includes 38 out of the 46 member states of the Council of Europe, plus Canada.
Co-production Podcast	A collaboration between Cineuropa and Eurimages, featuring episodes with producers sharing best practices and inspiring collaborations in the European and global film industry.
Annual Budget	Approximately €27.5 million, sourced from member state contributions and returns on loans granted by the Fund.
Support Schemes	1. Feature film co-production 2. Promotion of co-production 3. Exhibition
Additional Initiatives	Promotion of gender equality, diversity, and sustainability in the film industry. Supports fiction, animation, and documentary feature films with a minimum length of 70 minutes.
Project Calls	Three calls for projects per year with deadlines specified on the website. Projects undergo eligibility checks by the Secretariat, followed by

	assessment by Co-production Working Groups composed of external experts.
Funding Mechanism	Soft loans or subsidies for co-production support. Subsidies for the promotion of co-production and exhibition. Soft loans are repaid based on revenues generated by the supported projects.
Co-production Requirements	Projects must have at least two co-producers from different member states. For multilateral co-productions, the majority co-producer's participation must not exceed 70% of the total budget. For bilateral co-productions, the majority co-producer's participation must not exceed 80% of the total budget. Specific rules for bilateral co-productions with budgets above €5 million.
Distribution Support (Ended)	The Distribution Support Programme, which ended on March 31, 2020, aimed to support distributors in member states without access to the Creative Europe-MEDIA distribution program. The program's feasibility and design were evaluated.
Exhibition Support	Objectives: Increase programming of eligible films in cinemas in member states without access to Creative Europe MEDIA sub-programme. Support cinemas in enhancing programming and promotion. Build a network of cinemas.

In addition to the aforementioned funds and schemes private investors and production companies also provide funding in exchange for distribution rights or a share of the film's profits. Another source of funding may come from crowdfunding platforms and public support through initiatives like tax incentives or grants. The above funding opportunities aim to support the development, production, and distribution of European films, ensuring a thriving and competitive European filmmaking industry.

The focus of film policies on support to production is not matched with efforts related to delivery to the audience. The current state aid system is predominantly supporting film production without sufficient emphasis on distribution. In 2009, European public film funding bodies spent on average 69 % of their budget on the creation of works, while only 8.4 % was spent on their distribution and 3.6 % on their promotion. Funds operating at a supranational level tend to give distribution a higher priority (33.6 % in contrast to 35.7 % spent on creation) than national (7.4 % for distribution, 70.4 % for creation) and sub-national funds (3.5 % for distribution, 75.5 % for creation). However, as already indicated above, only a very small share of public funding comes from supranational funds. In the US, considerable budgets are devoted to the marketing of films, but this is generally not the case in Europe¹⁰.

A thriving European film industry requires a strategic realignment of expenditure across film production, distribution, and promotion. This necessitates addressing challenges and optimizing the impact of public funding schemes. The following key areas merit attention¹⁰:

Table 10: Key areas of attention for the funding and support programs.

Development Phase Emphasis	<ul style="list-style-type: none"> • Prioritize quality and profitability by emphasizing the development phase. • Ensure projects are designed to reach targeted audiences domestically and globally.
Balancing Production, Distribution, and Promotion	<ul style="list-style-type: none"> • Establish a balance between supporting production and facilitating efficient distribution and promotion. • Encourage producers to integrate well-designed distribution and marketing strategies.
Effective Exploitation of Funded Films	<ul style="list-style-type: none"> • Ensure films benefiting from public funding are effectively exploited and made accessible to the public.

Transparency and Reporting	<ul style="list-style-type: none"> Enhance transparency by requiring reporting on viewing figures across various distribution channels for publicly supported films.
Complementarity and Coherence	<ul style="list-style-type: none"> Strengthen overall complementarity and coherence of public support across regional, national, and supranational levels. Encourage funding across different activities, including development, production, distribution, and promotion.
Empowering Growth Strategies	<ul style="list-style-type: none"> Empower producers and industry players to transition from project-based approaches to enterprise growth strategies.
Contractual Deposit and Educational Use	<ul style="list-style-type: none"> Establish mechanisms for the contractual deposit of funded films, facilitating their educational use after commercial viability, in compliance with intellectual property rights.

4 Market Trajectories of a Sustainable Filmmaking Industry

The sustainability of the filmmaking industry is influenced by various trends and predictions, reflecting changes in consumer preferences, technological advancements, and industry practices. Table 11 presents some key trends and SCENE’s predictions related to the sustainability of the filmmaking industry, distilled from the first iteration of the desk research conducted under T6.3. The trajectories and trends below represent the combined findings of the first iteration of our desk research on the socioeconomic, technological and policy landscape of the EU filmmaking industry. Understanding and adapting to these trends can help SCENE as well as other stakeholders in the filmmaking industry navigate the evolving landscape and contribute to the industry's sustainability in the long run.

Table 11: Market trajectories, trends and SCENE’s predictions for a sustainable filmmaking industry.

Trajectory	Trend	Prediction
Digital Transformation	The industry is experiencing a significant digital transformation, from pre-production to distribution.	Increased reliance on digital tools and platforms will streamline workflows, reduce costs, and enhance efficiency.
Streaming Services Dominance	Streaming platforms continue to dominate the content distribution landscape.	Streaming services may reshape distribution models, impacting cinema attendance and revenue streams.
Content Diversification	Growing demand for diverse and inclusive content that reflects a variety of perspectives.	Filmmakers embracing diversity and inclusivity will likely find success in capturing broader audience segments.
Impact of Emerging Technologies	Integration of emerging technologies such as AI and blockchain is becoming more prevalent.	These technologies may revolutionize areas like audience engagement, content creation, and IP management.
Sustainability Initiatives	Filmmaking entities are increasingly adopting sustainable practices to minimize environmental impact.	Sustainable filmmaking practices may become a standard, driven by industry regulations and consumer expectations.
Hybrid Production Models	COVID-19 accelerated the adoption of hybrid production models, combining physical and virtual elements.	Hybrid models may persist, offering flexibility and cost-effectiveness in film production.
Interactive and Immersive Experiences	The rise of interactive and immersive storytelling experiences, including VR and AR.	Filmmakers exploring innovative narrative formats may find new avenues for audience engagement.
Global Collaborations	Increased collaboration on an international scale, with filmmakers and studios working across borders.	Global collaborations may lead to diverse storytelling and cross-cultural

		content that resonates with a wider audience.
Rise of Independent Filmmaking	Independent filmmakers are gaining prominence, facilitated by affordable technology and alternative funding models.	Independent filmmaking will continue to thrive, contributing unique voices and perspectives to the industry.
AI in Content Creation	AI is increasingly used in content creation, from script analysis to editing and special effects.	AI tools will become more sophisticated, impacting various aspects of filmmaking and enhancing creativity.
Evolving Distribution Strategies	Filmmakers are exploring innovative distribution strategies beyond traditional theatrical releases.	Flexible and dynamic distribution models, including day-and-date releases, may become more common.
Cinema Experience Evolution	Evolution of the cinema experience with enhanced technology, premium formats, and immersive sound.	Cinemas and producers will adapt to changing consumer preferences, offering unique and premium experiences to attract audiences.

5 Implications of Digital Tools on the EU Filmmaking Industry

The advent and integration of digital tools have profound implications for the EU filmmaking industry, touching various aspects of the filmmaking process. Table 12 outlines some of the key implications identified and their effects, aligned with the impact that they have on the filmmaking industry. Understanding and adapting to these implications is crucial for stakeholders in the EU filmmaking industry to harness the full potential of digital tools and navigate through the evolving landscape. It also provides insights on potential opportunities for innovation, collaboration, and the continuous growth of the industry in the digital era.

Table 12: Implications and effects of Digital Tools on the EU Filmmaking Industry, aligned with their related impact on the industry.

Impact on the Filmmaking Industry	Implication	Effect
Increased Efficiency in Production	Digital tools streamline various production tasks, from scriptwriting and storyboarding to scheduling and budgeting.	Filmmakers can save time and resources, leading to more efficient and cost-effective production processes.
Virtual Production Techniques	Virtual production tools, including virtual set-ups and backgrounds, offer new possibilities in filmmaking.	Filmmakers can create immersive environments and scenes, reducing the need for physical/real set-ups and expanding the creative possibilities.
Enhanced Post-Production Capabilities	Digital tools in post-production, including editing software and visual effects (VFX) tools, provide advanced capabilities.	Filmmakers can achieve higher production values, incorporating intricate special effects and refining the final product.
Revolution in Distribution and Exhibition	Digital distribution platforms and online streaming services transform the way films are exhibited and accessed.	Filmmakers can reach global audiences without relying solely on traditional theatrical releases, fostering diverse distribution models.
Digital Marketing and Audience Engagement	Digital tools facilitate targeted marketing campaigns, social media promotions, and audience analytics.	Filmmakers can engage with audiences more directly, gather valuable insights, and tailor marketing strategies based on real-time data.

More opportunities for new talents to enter the filmmaking industry (smaller groups, freelancers, etc.).	Digital tools lower barriers to entry, enabling emerging filmmakers and storytellers to create and share content.	The industry gains a broader range of voices contributing to a diverse and rich cinematic landscape.
Data-Driven Decision-Making	Digital tools provide data analytics and insights related to audience behavior, preferences, and market trends.	Filmmakers and studios can make informed decisions on content creation, marketing strategies, and business planning and tailor them to market needs.
Intellectual Property Management	Blockchain technology is increasingly used for IP management and rights tracking.	Filmmakers can secure and manage IP more efficiently, ensuring fair compensation and protection against piracy.
Collaborative Workflows	Cloud-based collaboration tools enable remote and real-time collaboration among filmmaking teams.	Geographically dispersed teams can work seamlessly together, fostering international collaborations and diverse creative input.
Adoption of AI in Filmmaking	AI is employed in script analysis, audience insights, and even in creative decision-making processes.	Filmmakers can leverage AI for enhanced storytelling and diversified narratives, targeted audience engagement strategies, and optimizing various aspects of the filmmaking workflow (e.g., expedite script analysis, editing, etc.).
Sustainability Initiatives	Digital tools contribute to sustainable filmmaking practices, reducing the need for physical resources (e.g., reduce travelling).	Filmmakers can embrace environmentally friendly practices (e.g., reduction of CO ₂ emissions), aligning with global sustainability goals.

6 Policy Measures in Support of a Competitive Filmmaking Sector and Sub-sectors

The end-goal of T6.3 is to produce a set of policy scenarios and recommendations that can support the competitiveness of the filmmaking sector and its sub-sectors. In this chapter we outline some key insights (based on the insights from the desk research) and attempt to propose SCENE’s preliminary policy recommendations. Based on our knowledge so far SCENE should aim to develop policy recommendations focusing on:

- Measures for effective integration of digital tools in the EU filmmaking industry.
- Skills development.
- Access to finance.
- Actions to protect and boost self-employed and freelancers.
- Addressing the sustainability of the production workflows.
- Addressing gender gaps.
- Actions needed to strengthen the role of European industry in the global markets.
- Actions to exploit the innovation potential of the filmmaking industry and their impact on the broader CCI and other EU sectors.

The table below summarizes SCENE’s preliminary policy scenarios, insights gained so far, and the preliminary policy recommendations. These will be reviewed (M18) under the new light that the results of the Delphi

exercise (SCENE GA T6.3) will shed, as well as the re-iteration of our desk research on the socioeconomic, technological and policy landscape of the EU filmmaking industry.

Table 13: SCENE’s preliminary policy scenarios, insights gained so far, and the preliminary policy recommendations.

Policy scenario	Insight	Policy recommendation
Investment in Talent Development	To stay competitive, nurturing a pool of skilled filmmakers, writers, directors, and technicians is crucial.	Introduce incentives and funding programs to support film schools, training programs, and initiatives that foster talent development. Encourage partnerships between industry professionals and educational institutions.
Financial Support and Incentives	Financial challenges can hinder film production and limit the industry's competitiveness.	Expand financial incentives, tax credits, and grants for film productions. Create flexible financing options, including public-private partnerships, to attract investors and ensure sustainable funding for filmmaking projects.
Streamlining Regulatory Processes	Cumbersome regulatory processes can slow down production and increase costs.	Simplify and streamline regulatory procedures related to film production, location permits, and distribution. Establish a dedicated body to facilitate communication between filmmakers and regulatory authorities.
International Collaboration	Collaboration with international partners can broaden exposure and open up new markets.	Develop and support initiatives that encourage international co-productions, film festivals, and joint ventures. Foster partnerships with global streaming platforms to promote European content worldwide.
Technological Innovation Support	Embracing emerging technologies is vital for staying competitive in the digital age.	Invest in research and development grants for technologies relevant to filmmaking, such as VR/AR and advanced post-production tools. Create innovation hubs and provide resources for tech startups focusing on the film industry.
IPR Protection and Licensing	Protecting IPR is essential for sustaining creativity and ensuring fair compensation.	Strengthen IPR protection through legislation and digital tools like blockchain. Facilitate licensing processes through smart contracts, making it easier for filmmakers to monetize their content.
Market Access and Distribution	Access to diverse distribution channels is crucial for reaching a global audience.	Facilitate market access by supporting the development of a diverse range of distribution platforms. Promote initiatives that help European films reach international audiences through strategic marketing and distribution partnerships.
Environmental Sustainability	Increasing focus on sustainability is shaping consumer preferences and industry practices.	Introduce green filmmaking incentives that reward environmentally sustainable practices in film production. Encourage

		the use of eco-friendly technologies and production methods.
Cultural Diversity and Inclusivity	Embracing cultural diversity and inclusivity enhances the richness of European cinema.	Implement policies that promote diversity in filmmaking, both on-screen and behind the scenes. Support initiatives that highlight underrepresented voices and stories.
Audience Engagement and Education	An engaged and informed audience is vital for the success of the filmmaking industry.	Invest in educational programs that promote media literacy and film appreciation. Support initiatives that bring filmmakers closer to their audiences, fostering a stronger connection and understanding.

7 Previous Project Findings and alignment (WP2)

The landscape of filmmaking is a dynamic realm where a multitude of skilled professionals collaboratively contribute to the realization of captivating stories on the silver screen. In the exploration conducted within Work Package 2 (WP2), the focal point was understanding the perspectives and responsibilities of pivotal stakeholders in the filmmaking process. Noteworthy contributors such as Location Managers, Set Designers, Directors, Producers, and Investors were scrutinized to unravel the intricate facets of their roles. The subsequent section introduces a table encapsulating challenges and solutions across various stages of film production, providing a consolidated reference. Additionally, it aligns the SCENE project's goals with emerging trends and innovations in the filmmaking industry, reinforcing the project's commitment to fostering advancements that resonate with the industry's evolving landscape.

Filmmaking is a collaborative endeavor that thrives on the expertise and contributions of diverse stakeholders, each playing a significant role in bringing stories to life on the screen. In WP2 we explored the perspectives and responsibilities of key stakeholders such as Location Managers, Set Designers, Directors, Producers, and Investors, shedding light on the multifaceted nature of their roles.

Location Managers are the architects of a film's spatial canvas, overseeing the strategic handling and administration of physical locations. Their responsibilities span from the identification and analysis of potential locations to the final decision-making, site selection, and ongoing monitoring. The role involves resource allocation, risk management, and the crucial tasks of optimization and improvement. In essence, Location Managers ensure that the chosen settings align with the film's vision and contribute to its success. Set Designers bring the imaginary to life, transforming scripts into visually captivating scenes. The process involves a deep understanding of the script, conceptualization, research, and collaboration with various stakeholders. Set Designers create initial designs, collaborate with production teams, plan construction, and oversee the entire process from rehearsals to final touches. Their dynamic role requires a delicate balance between artistic vision and practical considerations to ensure the sets enhance the overall production.

Directors are the conductors of the filmmaking orchestra, shaping the creative vision from script to screen. Their involvement in script development, casting decisions, and visualizing the film is paramount. Directors collaborate closely with other stakeholders, including Set Designers, to ensure a harmonious execution of the envisioned narrative. Their role extends to storyboarding, shot lists, and the overall orchestration of the film's visual style and tone.

Producers undertake a multifaceted role, overseeing the entire lifecycle of a film. From project development, financial management, and team assembly to creative decision-making, logistics, marketing, and legal tasks, Producers are the backbone of a film's production. Their dynamic role adapts to the needs of each project, ensuring that artistic, financial, and logistical objectives are met.

Investors play a crucial role in fueling the industry's creativity. Their involvement requires an evaluation of script quality, talent, budget, market potential, and distribution strategies. Investors mitigate risks through due diligence, legal considerations, and diversification of their portfolios, contributing to the sustainable growth of the filmmaking industry.

Each stage of production is presenting its own set of challenges. From the intricate process of choosing filming locations to navigating legal complexities in obtaining permits and securing funding, filmmakers grapple with a myriad of obstacles. Table 14 encapsulates key challenges, derived from the outputs of D2.2, discussed by stakeholders such as location managers, set designers, directors, producers, and investors. It not only outlines these challenges but also presents current solutions employed by the industry. Moreover, Table 14 delves into potential areas for innovation, envisioning transformative solutions that could streamline processes, reduce costs, and introduce sustainability.

Table 14: Key challenges, solutions and opportunities (D2.2 outputs).

Stage	Challenges	Solutions	Opportunities
Location choosing	The process is time-consuming and fragmented, relying on existing archives lacking a unified system.	Collaborating with multiple location managers and expanding internal archives is the current countermeasure, but a diverse and searchable database could assist the pre-production phase.	The creation of a centralized, user-friendly database for filming locations, incorporating parameters, relevant search functionalities, and accessibility, could streamline the location selection process for filmmakers.
Location Permits	Obtaining permits for locations with multiple authorities and owners is time-consuming, complicated by a lack of clear legal guidelines.	Negotiating with authorities, promising promotional benefits, and enhancing legal ways to obtain permits are current countermeasures.	Implementing a standardized, streamlined permitting process and legal framework could simplify location permits, reducing the administrative burden for filmmakers.
Locations Approval	The process of selecting and planning a shoot involves time-consuming data exchange and multiple visitations.	Current countermeasures involve external resources for data transfer and visualization tools.	Developing an integrated platform for remote collaboration, data exchange, and visualization, using tools like VR or AR, could enhance the efficiency of the pre-production phase.
Recce ¹	Planning and designing sets through on-site visits incur additional time and expenses, especially for international locations.	Current countermeasures involve multiple trips to locations.	Implementing remote tools for collaborative planning, leveraging VR or AR, could make pre-production more cost-effective, efficient, and environmentally friendly.

¹ Recce is a pre-filming visit to a location to determine its suitability for shooting. This is commonly carried out by the Director of Photography and includes access to necessary facilities and assessment of any potential lighting or sound issues, and is closely related to location scouting.

Lighting Conditions	Planning scenes based on daylight conditions requires considering sun direction and movement.	Current countermeasures involve external apps predicting sun direction.	Incorporating light simulation tools into the planning process could enable remote, advanced shooting planning, involving directors, DOPs, and gaffers.
Audio Conditions	Dealing with unpredictable audio conditions during shoots.	Employing advanced audio recording and processing technologies, including directional microphones and post-production sound editing.	Exploring sound simulation technologies for pre-production planning, allowing filmmakers to simulate and plan for different audio scenarios before the actual shoot. This could enhance the overall sound design and quality in film productions.
Funding	High production budgets and unpredictable results create challenges in securing funding.	Current countermeasures include crowdfunding, private investors, grants, and film festivals.	Exploring alternative funding models, implementing crowdfunding platforms, and enhancing collaboration with private investors could diversify funding sources for filmmakers.
Distribution	Shifting from traditional cinema to digital and streaming platforms requires solid distribution plans.	Current countermeasures involve working with external distribution companies.	Developing tools that suggest distribution options during pre-production or post-production stages could broaden distribution opportunities and enhance revenues.
Script and Idea Validation	Every script undergoes validation on script and financial levels, impacting investor attraction.	Current countermeasures involve thorough validation and market research.	Providing filmmakers with an official report, including financial projections and market research, could increase the appeal of scripts to potential investors.
Copyrights	Managing legal agreements and copyrights for crew, cast, and distribution is intricate and time-consuming.	Current countermeasures involve creating various agreements for different channels.	Implementing automated or unified systems for legal agreements and copyrights could enhance transparency and simplify the legal aspects of filmmaking.

Table 15 illustrates how the SCENE project is well-positioned to contribute to and align with emerging trends and innovations in the filmmaking industry.

Table 15: Alignment of SCENE’s goals with the industry trends.

SCENE’s Goal	Trend Alignment
G1: Interoperable Architecture	SCENE aims to establish an interoperable architecture (G1), enabling seamless connections between different systems. This aligns with the future trend of integrated technologies in filmmaking.
G2: Promote Europe’s Cultural Heritage	The project’s goal to adopt technologies for promoting Europe’s cultural heritage (G2) is in line with the industry’s potential innovation in leveraging cultural richness for storytelling.



G3: Early Evaluation of Filming Conditions and G15: Acoustic modelling	SCENE's focus on simulating lighting and acoustic conditions (G3 and G15) addresses the industry's need for advanced tools in pre-production, reflecting a trend towards more precise filming conditions.
G4: High-Precision and Realistic Digital Surrogates/Models	The creation of high-precision 3D models (G4) aligns with the growing demand for realistic digital assets, showcasing a trend in enhancing visual and virtual experiences.
G5: Integration of Different Technologies	SCENE's commitment to using open-source tools and common protocols (G5) reflects the industry's shift towards integrated technologies for modernization and increased competitiveness.
G9: Location Scouting	The development of a system to assist location scouting (G9) aligns with the industry's ongoing emphasis on finding unique and culturally rich settings for film productions.
G10: Quality Metrics	SCENE's goal to produce quality metrics for post-production effects (G10) caters to the industry's increasing focus on measuring and enhancing the overall quality of film content.
G11: New Ontology	The creation of a new, scalable ontology (G11) aligns with the industry's trend towards adopting advanced frameworks for better structuring and organizing film-related data.
G12: Recommendation System	The inclusion of a recommendation algorithm (G12) is in line with the industry's adoption of personalized content delivery systems and reflects a trend in enhancing user experiences.
G13: Blockchain in IPR Management	SCENE's support for smart contracts and efficient IPR management (G13) aligns with the industry's exploration of blockchain for secure and transparent intellectual property rights.
G14: Distribution Technologies	The focus on secure and controlled distribution of media files (G14) resonates with the industry's need for advanced distribution technologies, catering to diverse audience preferences.
G17: Media Asset Manager (MAM) and G18: Data Lakes	The development of SCENE's MAM (G17) and the creation of a common data lake (G18) aligns with the industry's move towards centralized repositories, facilitating efficient data management across various filmmaking tools.
G19: Ontology Alignment	SCENE's automatic ontology alignment tool (G19) reflects the industry's need for seamless knowledge integration, ensuring a unified and holistic understanding of film-related data.
G20: Post-Production and Playout Tools	Enabling interactive enrichment (G20) aligns with the industry's pursuit of advanced post-production tools, emphasizing the importance of engaging and immersive content.
G21: Post-Production Effects	SCENE's goal to improve aesthetic and artistic aspects (G20) resonates with the industry's ongoing focus on enhancing visual effects and artistic elements in filmmaking.
G22: Audience Preferences Scouting	The tool aiming to predict audience trends (G22) aligns with the industry's increasing reliance on data-driven insights for understanding and meeting audience preferences.

8 Initial Insights and Predictions (Looking into 2035)

Predicting the future of any industry involves a degree of speculation, however considering our current insights on the current trends and potential advancements in the industry we will attempt to outline some predictions for the EU filmmaking industry in 2035 in Table 16.

Table 16: Initial Insights and Predictions.

Prediction	Details
Rise of VR/AR Experiences	By 2035, virtual and augmented reality technologies are likely to be integrated into filmmaking, offering immersive and interactive storytelling experiences. Audiences will have the option to engage with narratives in more dynamic ways, blurring the lines between cinema and virtual worlds.
AI-Enhanced Scriptwriting and Creative Processes	AI tools may play a more significant role in script analysis, story generation, and even creative decision-making. AI algorithms could assist filmmakers in predicting audience preferences, optimizing story arcs, and providing data-driven insights throughout the creative process.
Blockchain for Transparent Royalties and Rights Management	Blockchain technology is expected to be widely adopted for transparent and decentralized management of intellectual property rights. This could revolutionize how royalties are distributed among creators, ensuring fair compensation and reducing issues related to piracy.
Diversity and Inclusion at the Forefront	The industry is likely to see a continued emphasis on diversity and inclusion, with a more comprehensive representation of voices in storytelling. Initiatives promoting gender equality, cultural diversity, and inclusion of underrepresented communities may reshape the narratives presented in European cinema.
Sustainable Filmmaking Practices	Sustainability in filmmaking is expected to be a paramount concern. Eco-friendly production methods, reduced carbon footprints, and green filmmaking initiatives may become industry standards. Technological advancements could contribute to more sustainable workflows and resource-efficient practices.
Collaboration with Emerging Technologies	Continued collaboration with emerging technologies such as 6G networks, advanced AI, and new digital platforms may lead to innovative storytelling formats. Interactive and personalized content experiences tailored to individual viewer preferences could become more prevalent.
Evolution of Film Distribution Models	Traditional film distribution models may undergo further transformation. Direct-to-consumer streaming services, virtual cinemas, and decentralized distribution platforms could become more prevalent, offering filmmakers alternative avenues to reach audiences.
Personalized and Data-Driven Filmmaking	Filmmakers may increasingly rely on data analytics to tailor content to specific audience segments. Personalized filmmaking, driven by viewer preferences and data insights, could result in more engaging and relevant storytelling experiences.
Integration of Biometric Feedback in Cinematic Experiences	Advances in technology may allow for the integration of biometric feedback into cinematic experiences. Films could adapt in real-time based on the audience's emotional responses, creating a more immersive and personalized viewing experience.
Continued Global Collaboration	Collaboration between international filmmakers, studios, and talent is likely to expand further. Cross-border collaborations facilitated by digital tools and platforms could lead to a more interconnected and globally influenced European film landscape.
New Narratives in Post-Humanism and AI Ethics	As AI becomes more ingrained in society, filmmakers may explore narratives that delve into post-humanism, ethical dilemmas related to AI, and the intersection of technology and humanity. These themes could be central to futuristic storytelling.

While these predictions offer a glimpse into potential future developments, it's essential to recognize the dynamic nature of the industry and the unpredictability of technological, societal, and cultural shifts. The EU filmmaking industry in 2035 will likely be shaped by a combination of innovation, creativity, and the evolving preferences of audiences.

9 Questionnaire Development

One of the key outcomes of T6.3 was to generate a questionnaire to gather collective forecasts on future trajectories regarding market sustainability, policy measures, and implications of digital tools on the EU filmmaking industry. This questionnaire will feed into a 2-round Delphi exercise that will include stakeholders with expertise in the filmmaking industry, Cultural and Creative Industries (CCIs), and digital tools. The consortium of SCENE will use their independent network to expand the existing list of stakeholders questioned under T2.2. Furthermore, SCENE will disseminate the questionnaire and its results to its Network of Interest (NoI) that is currently building under T6.4. The network aims to unite stakeholders, including industry professionals, policy and governing bodies, research communities, international and European cultural organizations, and civil society.

9.1 Delphi Exercise Overview

Evidenced by its application in 175 research studies featured in business and management journals, as well as 116 studies found in social science and law journals spanning the years 1975 to 2017 (Flostrand et al. 2020⁷²), the Delphi technique stands out as a widely utilized method for forecasting. This technique is designed to predict human-generated, or more precisely, cultural occurrences (Woudenberg 1991⁷³). In contrast to natural phenomena, which adhere to inherent laws, the future evolution of culture is shaped by intricate social interactions encompassing the intentions, conduct, and influence of diverse individuals and groups, as well as chance events (Tiberius 2011⁷⁴).

The first round of a Delphi survey is generally broad and exploratory, designed to gather as much information as possible about the subject at hand. The second round of the Delphi survey typically builds upon the responses received in the first round. At this stage, the questionnaire is more structured and often uses a Likert scale to quantify the participants' level of agreement or likelihood.

The Delphi study is a systematic and iterative research method designed to gather and distill insights from a panel of experts on a particular subject. It aims to achieve convergence of opinions through a series of structured surveys conducted in multiple rounds. The process involves obtaining expert feedback, aggregating responses, and providing participants with anonymized summaries to encourage informed reconsideration in subsequent rounds. The Delphi method is particularly useful for exploring complex and uncertain topics where expert judgment is critical. The Delphi study's strength lies in its ability to refine understanding and achieve consensus among experts on complex and uncertain topics over successive rounds of inquiry. The process facilitates an informed and collective exploration of the subject matter, often resulting in valuable insights and recommendations.

Under T6.3, SCENE will conduct a two-round Delphi exercise involving around 20-25 stakeholders with expertise in the filmmaking industry, Cultural and Creative Industries (CCIs), and digital tools. The aim of the questionnaire is to gather collective forecasts on future trajectories regarding: (i) market trajectories of a sustainable filmmaking industry; (ii) policy measures in support of a competitive filmmaking sector and sub-sectors; (iii) the implications of digital tools on the EU filmmaking industry. As a starting point the stakeholders surveyed under T2.2: End-User needs & Requirements will be used. This list will be re-iterated and enriched further with stakeholders from the consortium partner's network. Special attention will be given to providers of digital tools for CCIs and other related groups, since the list is already highly populated with stakeholders involved directly with the filmmaking industry. Moreover, SCENE's NoI will also be utilized for the further dissemination of these questionnaires, as well as their results.

9.2 SCENE's Questionnaire and methodology

In the first round the participants will receive a detailed introduction to the study's purpose, scope, and objectives, including the context of the study, with clarifications on key terms and concepts. This introduction

will accompany the questionnaire ([ANNEX I](#)) that covers a range of relevant topics, seeking expert opinions, insights, and predictions. The participants will individually respond to the questionnaire, providing qualitative and, in some cases, quantitative feedback. The questionnaire is also accompanied by the relevant consent form ([ANNEX II](#)) covering Personal data, data processing and confidentiality. The responses will be anonymous to encourage candid opinions. This will be done by analyzing the responses in aggregate form, and no individual participant's data will be singled out. Only summarized/aggregated information will be reported.

The collected responses will be aggregated and analyzed to identify patterns, areas of agreement, and points of contention. Key themes and trends will be extracted from the qualitative input. Then a summarizing report of the findings from Round 1 will be prepared. This report will be part of D6.10, the next iteration of this deliverable. The report will include visual representations of data, such as charts or graphs. Then the participants will receive anonymized summaries of the collective responses, without revealing individual contributions. The participants have the opportunity to reflect on the group's responses and may reconsider their own viewpoints. Under new light clarifications or adjustments can be made based on this interim feedback.

Before round two begins we will refine the questions based on the analyzed responses and interim feedback. Then we will refine or introduce new questions for Round 2. Then the participants will receive the updated questionnaire, which may include refined questions or seek clarification on specific issues. Then the participants respond to the revised or new set of questions, again providing qualitative and potentially quantitative feedback. The responses from Round 2 are aggregated and analyzed similarly to Round 1, with a focus on changes, emerging consensus, or persistent divergences. A final report will be prepared, incorporating findings from both rounds. The report will highlight areas of convergence, persistent disagreements, and insights gained through the iterative process.

10 Policy Workshop: Plan and Expected Outcomes

10.1 SCENE's Policy Workshop

This section provides details about the policy workshop to be realized under T6.3. Specifically, SCENE will host a policy workshop to discuss the identified scenarios, insights from pilot activities, and to reveal framework conditions and policy gaps of the sector, as well as the factors that could potentially boost its future development.

The objective of the policy workshop is to identify key goals, such as discussing identified scenarios, sharing insights from pilot activities, and addressing framework conditions and policy gaps in the filmmaking sector. The desired outcome of this workshop is to gain deeper insights that will assist in the development of specific policy recommendations and/or action plans.

The consortium will identify and invite a diverse group of stakeholders, including policymakers, industry professionals, researchers, and representatives from relevant organizations. We will attempt to ensure a mix of perspectives to foster rich and comprehensive discussions. This will be attempted through utilizing the individual partner's network and the SCENE's network of Interest, that is currently under development in T6.4. Furthermore, we will explore and identify EC initiatives that align with the focus areas of the project.

To prepare for this we will create a detailed agenda outlining the topics to be covered, session durations, and any interactive activities or group discussions. We will structure the agenda with the spirit to allow for presentations, panel discussions, and participant engagement. This involves identifying and inviting speakers who can provide expertise on the identified scenarios, insights from pilot activities, and policy considerations. Further preparations for the workshop include the collaboration with the presenters to gather and prepare the presentation materials. This may include data from pilot activities, scenario analyses, and relevant policy frameworks. We will share the said materials with the involved participants in advance to facilitate informed discussions.

The workshop will incorporate interactive elements such as Q&A sessions, panel discussions, and group activities. This will be to encourage participants to share their experiences, insights, and perspectives. We will consider using technology tools for virtual engagement if the workshop is conducted online (e.g. Slido).

In addition, we will prepare discussion prompts to facilitate conversations on identified scenarios, pilot insights, and policy gaps. We will attempt to structure the questions in a way that encourages participants to provide actionable recommendations.

Subsequently, we will capture the key insights from the policy workshop (note-takers and/or recording mechanisms). This information will be valuable for post-workshop analysis and the formulation of a report. We will also implement a feedback mechanism to gather participants' opinions on the workshop's effectiveness. This feedback can inform future events and improvements. Based on the outcomes of the workshop we will plan for follow-up actions. This may involve the formulation of policy documents, the dissemination of workshop findings, or the initiation of collaborative projects.

10.2 Preliminary plan for Policy Dissemination

Through the policy workshop described above, the policy scenarios developed, after the refinement process based on the Delphi exercise results and the pilot insights will be discussed in order to reveal the framework conditions and policy gaps of the sector as well as the factors that could potentially boost its future development. In addition, a preliminary exploration of key European Commission (EC) initiatives has been already conducted, that can serve as potential channels for disseminating the policy recommendations derived from the SCENE project. The objective is to identify strategic platforms and programs within the EC that align with the focus areas of SCENE, ensuring effective communication and impact on European policymaking. So far, we identified the Directorate-General for Communications Networks, Content and Technology (DG CONNECT), the DG CNECT Media and Data and the Creative Europe Programme.

DG CONNECT focuses on digitalization, content, and technology, making it a key player for disseminating insights on the technological advancements and digital tools in the filmmaking industry. Our initial engagement plan includes the establishment of direct communication channels with DG CONNECT representatives, participate in relevant events, and explore opportunities for collaborative workshops or presentations.

The DG CNECT Media and Data directorate deals specifically with media, audiovisual policy, and data. Given its focus on media, it is an ideal platform for sharing policy recommendations related to the filmmaking industry. Here our preliminary engagement plan includes attending workshops or conferences organized by DG CNECT Media and Data, submit relevant documents, and explore partnerships for mutual dissemination. The Creative Europe Programme supports the cultural and creative sectors, including film. Engaging with this program can amplify the impact of SCENE's recommendations within the cultural and creative industries. Our engagement plan here aims to leverage existing networks or partnerships, apply for relevant funding programs, and actively participate in events organized by the programme.

Our dissemination plan for the policy recommendations starts by identifying the key contacts. This includes establishing direct contacts with key individuals within the identified EC initiatives. This may involve attending industry-related events, networking, and leveraging existing partnerships. In addition, we need to tailor SCENE's policy recommendations into compelling and concise presentations that align with the specific focus areas of each EC initiative. Then we may organize a dedicated policy workshop(s) or webinar(s) in collaboration with EC initiatives to present SCENE's findings. This will add an extra layer in our interactive approach, which can facilitate in-depth discussions and engagement. Through these activities SCENE may achieve to develop succinct policy briefs and comprehensive reports highlighting the key recommendations in the long run, reviewed by industry experts. This includes also ensuring that these documents comply with the communication standards of the targeted EC initiatives.

Furthermore, the SCENE partners will attempt to actively participate in events organized by these EC initiatives. This includes submitting proposals for presentations, panels, or workshops that showcase SCENE's insights. At the same time, we will utilize online platforms and portals provided by EC initiatives for the dissemination of SCENE's policy recommendations. This could involve contributing articles, blog posts, or participating in online forums.

This chapter outlines the preliminary steps for engaging with relevant European Commission initiatives to disseminate SCENE's policy recommendations effectively. The success of this dissemination plan relies on proactive engagement, tailored communication, and strategic collaboration with key stakeholders within the

European Commission. Future updates in the subsequent report (D6.10) will provide detailed progress and outcomes of these dissemination efforts.

11 Conclusion and Next Steps

11.1 Conclusions

The technological landscape significantly influences each phase of filmmaking. Pre-production involves tasks like location scouting and script development, where digital tools and AI play pivotal roles. Production integrates technologies for shooting, lighting, and audio simulation. Post-production relies on sophisticated editing tools and visual effects.

In addition to the production process, technology also reshapes how films are distributed and consumed. The rise of streaming services, digital platforms, and innovative distribution models are altering traditional paradigms. While technology presents immense opportunities, it also poses certain challenges to the industry. The technological landscape is a cornerstone in understanding the future trajectory of the EU filmmaking industry. By comprehensively assessing the adoption and impact of advanced technologies, this research contributes valuable insights that will inform the subsequent deliverable (D6.10) of the current document, particularly in crafting recommendations for technology integration and innovation.

The ongoing digital transformation is a hallmark of the contemporary filmmaking landscape. Pre-production sets the stage for a film's creation. The production phase witnesses the convergence of traditional filmmaking techniques with cutting-edge digital technologies. Cinematography, lighting, and audio simulation benefit from digital advancements, enhancing the quality and efficiency of film production. Furthermore, filmmakers are increasingly relying on AI algorithms for audience analysis, aiding decision-making in script development and casting choices. Post-production is the critical phase where editing, visual effects, and sound design come together. The adoption of digital tools in post-production significantly impacts the final product's aesthetics and appeal. Video editing software, visual effects technologies, and sound engineering tools, have transformative effects on the filmmaking process. Digital platforms and streaming services have disrupted traditional distribution models. Advancements in technology influenced audience reach, accessibility, and viewing experiences. Further insights into these emerging distribution platforms and technologies provide a forward-looking perspective on industry dynamics. While AI contributes to audience analysis and content recommendation, blockchain enhances aspects like intellectual property rights and secure transactions. Furthermore, the relationship between technology and artistic expression needs to be symbiotic, ensuring that innovation enhances creativity without compromising the authenticity of filmmaking.

Storytelling lies at the core of filmmaking, and innovative technologies are influencing narrative structures and presentation. Technologies like VR and AR are employed to create immersive storytelling experiences. Additionally, advancements in AI contribute to script analysis, aiding in the development of compelling and audience-engaging narratives.

Technology also streamlines the filmmaking process. From innovative lighting and audio solutions to the use of 3D modeling and simulations, these technologies enhance efficiency and creativity during the production phase. The real goal is to identify technologies that empower filmmakers without overshadowing their creative vision. Discussions revolve around how technological innovations should complement, rather than replace, the creative input of filmmakers. Striking a balance between technological advancements and artistic expression is crucial for ensuring the continued uniqueness of European filmmaking.

In D6.3 we dissected the digital transformation trends and the integration of digital tools, to gain insights into the EU filmmaking industry's technological landscape. These insights laid the groundwork for the recommendations regarding technology adoption, innovation, and policy considerations. Those will be reported in the second iteration of this deliverable (D6.10).

The analysis also identified the extent to which existing funding mechanisms prioritize sustainability and innovation within the filmmaking industry. This involves identifying initiatives that specifically target

environmentally conscious practices, technological advancements, and creative innovations. The existing funding landscape aims to enhance support for initiatives fostering sustainability and innovation, as well as inclusivity (accessibility for small-scale filmmakers, gender diversity, and regional representation).

11.2 Next steps

Given the increasing role of digital tools and platforms, a dedicated exploration of digital rights and intellectual property protection will be undertaken. This includes an assessment of how existing policies safeguard the rights of filmmakers in the digital landscape and whether adjustments are needed to address emerging challenges.

Further research on policies promoting inclusivity and diversity within the filmmaking industry. This involves evaluating the effectiveness of initiatives aimed at addressing gender imbalances, fostering representation, and ensuring that policy measures contribute to a more inclusive and diverse cinematic landscape. In addition, the research will continue by evaluating existing policies related to funding, intellectual property rights, and cross-border collaborations.

The 2nd iteration of the analysis will also seek to uncover potential gaps in the current policy landscape that may impede the industry's growth and adaptation to emerging trends. This is crucial for formulating targeted recommendations that address specific areas requiring policy intervention. Building on the insights gained, D6.10 will report recommendations for future policy measures, aligned with the evolving needs of the EU filmmaking industry.

All in all, the next steps of T6.3 include:

- The re-iteration of the desk research on socioeconomic, technological and policy landscape of the EU filmmaking industry.
- Initiate networking with industry stakeholders and experts, as well as with EC initiatives.
- The distribution of the questionnaire produced to initiate the 1st round of the Delphi exercise.
- Collection and analysis of the results.
- Distribution of the results to the involved participants.
- Refinements and preparation for the 2nd round.
- Repeat the distribution of the refined questionnaire and the results collection and analysis (2nd round of the Delphi exercise)
- Organize and conduct the policy workshop.
- Validate the set of recommendations with experts and synthesize the final policy brief.
- Report all insights and produced set of policy recommendations in D6.10 (M36).



ANNEX I: SCENE Questionnaire - Delphi Exercise 1st round:

Introduction:

Thank you for participating in the Delphi exercise for the SCENE project! SCENE is a 36-month EU funded project, aiming to revolutionize the EU filmmaking industry by seamlessly integrating advanced technologies across the filmmaking process. The project encompasses a holistic approach, combining innovative tools and services from pre-production to distribution.

About SCENE:

The SCENE platform integrates cutting-edge technologies such as blockchain, AI (non-generative), and 3D modelling to enhance various facets of filmmaking. From Location Scouting and Audience Building to AI-based Audience Preferences Scouting and a Distribution Engine, SCENE envisions a transformative impact on the industry. The SCENE platform includes a robust Media-Asset-Manager, EU Cultural Heritage 3D Modelling, Blockchain-based IPR preservation, and a suite of tools for Location Scouting, Lighting and Audio Simulation, Audience Building, and Distribution. Please note that the AI technologies employed in the SCENE project are focused on analysis, such as sentiment analysis or data analytics. These AI technologies are not generative AI and are designed to assist filmmakers rather than replace their roles. Your insights on the practical applications of these tools in filmmaking are invaluable.

Purpose of this questionnaire:

Your insights are crucial to shaping the future trajectory of the EU filmmaking industry. In this questionnaire, we seek your expertise to understand market trends, challenges, and opportunities, as well as gather perspectives on policy measures and the integration of digital tools. Your responses will contribute to the foresight study, guiding practical policy recommendations for the filmmaking industry, particularly in the context of emerging technologies explored by the project SCENE.

Questionnaire Overview:

Participant Details: To better understand your background and expertise.

Market Sustainability: Identify key trends shaping the industry in the next decade. Highlight potential challenges hindering growth and sustainability. Share specific opportunities for enhancing sustainability and competitiveness.

Policy Measures: Discuss your perspective on necessary policy measures and potential impacts.

Digital Tools Integration: Provide thoughts on integrating digital tools into the filmmaking process. Provide your opinion on expected challenges and suggest strategies.

Emerging Technologies and Global Trends: Share your perspective on how emerging technologies, such as AI and blockchain, will influence the industry.

Additional Insights: We encourage you to highlight any aspects not covered and share additional comments.

Your participation is invaluable in creating a comprehensive understanding of the industry's future. Thank you for contributing to this exciting venture!

1. Participant Details



Position:
Organization:
Expertise:

2. Market Sustainability:

2.1. How do you foresee the market dynamics of the EU filmmaking industry evolving in the next 5-10 years? Are there specific trends (technological, cultural, economic) that will significantly impact the future of the EU filmmaking industry and the demand for EU films?

Trend 1:
Trend 2:
Trend 3:
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.....

2.2. What are the potential challenges that could hinder the growth and sustainability of the EU filmmaking industry in the future? Please rate the perceived severity of the challenge, where 1 is least severe and 5 is most severe.

Challenge 1:
Challenge 2:
Challenge 3:
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2.3. In your opinion, are there specific opportunities you believe can enhance the sustainability and competitiveness of the industry?

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2.4. How can the EU filmmaking industry enhance its competitiveness on a global scale? Do you anticipate the emergence of new players or business models that could reshape the industry's competitive landscape?

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3. Policy Measures:

3.1. What policy measures do you think are crucial to support a competitive filmmaking sector and its sub-sectors (pre-production, production, post-production, distribution)?

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3.2. How might current policies impact the future of the EU filmmaking industry, especially in relation to advanced technologies like blockchain and AI?



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3.3. Any policy changes you would recommend to strengthen the EU filmmaking industry in light of technological advancements?

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3.4 How can EU regulations better support the filmmaking sector, considering technological advancements and changing consumer behaviours?

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3.5 Should there be specific regulations to encourage cross-border collaborations and co-productions?

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3.6. How aware are you of existing EU funding programs supporting the filmmaking industry (e.g., Creative Europe, MEDIA)? Have you or your organization benefited from these programs, and what were the challenges faced?

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3.7. What improvements or innovations do you suggest for existing public funding mechanisms supporting the EU filmmaking industry?

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3.8. How can funding agencies adapt to ensure inclusivity and diversity in film production?

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3.9. How can the EU attract more private investment in filmmaking? Are there models from other regions that could be emulated?

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3.10. What new funding mechanisms or initiatives would you propose to stimulate innovation and sustainability in the EU filmmaking sector?

4. Digital Tools Integration:

4.1. To what extent do you believe digital tools and technologies will shape the production, distribution, and consumption of films in the EU? Are there specific digital trends that might disrupt or enhance traditional filmmaking processes?

Trend 1:

Trend 2:

Trend 3:

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4.2. Which digital tools do you believe will have the most significant impact on the EU filmmaking industry's future?

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4.3. How can the industry leverage artificial intelligence, virtual reality, or other emerging technologies?

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4.4 How do digital tools influence audience engagement with films? Are there opportunities for interactive or immersive experiences?

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4.5. To what extent should the filmmaking industry embrace data analytics for decision-making, content creation, and marketing?

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4.6. What challenges do you anticipate with integrating digital tools into the filmmaking process? Please rate the perceived difficulty of integrating, where 1 is least challenging and 5 is most challenging.

Challenge 1:

Challenge 2:

Challenge 3:

.....
.....

4.7. Any strategies you would suggest for effectively integrating digital tools in the filmmaking industry?



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5. Emerging Technologies and Global Trends:

5.1. In your view, how do you anticipate emerging technologies, such as artificial intelligence (AI) and blockchain, influencing the EU filmmaking industry in the next decade?

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5.2. With a growing focus on sustainability, how do you foresee the environmental impact of filmmaking evolving, especially in relation to digital processes and tools?

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6. Open-Ended Questions:

6.1. Are there any other important aspects or factors that we have not covered in this questionnaire that you believe will significantly influence the future of the EU filmmaking industry?

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6.2. Are there any additional comments or suggestions you would like to share related to the topics discussed in this questionnaire or the SCENE project?

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Please answer the above questions to the best of your ability. We value your expertise and insights. The information you provide will help us understand the potential future trajectories of the EU filmmaking industry. Thank you for your participation!

ANNEX II: Information sheet and consent form for SCENE’s policy questionnaire

SCENE Delphi exercise - Consent Form

This consent form is for the questionnaire of the first round of SCENE’s Delphi exercise, as a foresight study of the EU’s filmmaking market trajectories, policy landscape and the implications on the adoption of digital tools. The form covers both the participation of humans and processing of personal data.

The information sheet covers both the participation of humans and processing of personal data.

Information about the Delphi exercise questionnaire:

Background

SCENE is a European Horizon Europe research project that aims to offer the means for a modern and globally competitive, European filmmaking industry, by building upon two solid pillars, i.e. semantically cognitive AI technologies and the (in)tangible European Cultural assets, always with respect to the European values & policies regarding the human and its environment. More details about the project are available on <https://cordis.europa.eu/project/id/101095303>.

SCENE is a 36-month EU-funded project that integrates advanced technologies to enhance the entire filmmaking process from pre-production to distribution. The SCENE platform integrates cutting-edge technologies such as blockchain, AI (non-generative), and 3D modelling to enhance various facets of filmmaking. From Location Scouting and Audience Building to AI-based Audience Preferences Scouting and a Distribution Engine, SCENE envisions a transformative impact on the industry. The SCENE platform includes a robust Media-Asset-Manager, EU Cultural Heritage 3D Modelling, Blockchain-based IPR preservation, and a suite of tools for Location Scouting, Lighting and Audio Simulation, Audience Building, and Distribution.

The Consortium

The SCENE Consortium consists of 14 partners, from 7 European countries, coordinated by Dr. Anastasios Drosou on behalf of the Centre for Research & Technology Hellas (CERTH):

ID	Organisation	Short Name	Country
1	ETHNIKO KENTRO EREVNAS KAI TECHNOLOGIKIS ANAPTYXIS	CERTH	GREECE
2	HIT HYPERTECH INNOVATIONS LTD	HIT	CYPRUS
3	FONDAZIONE LINKS - LEADING INNOVATION & KNOWLEDGE FOR SOCIETY	LINKS	ITALY
4	DIGITALTWIN TECHNOLOGY GMBH	DTT	GERMANY
5	MOG TECHNOLOGIES SA	MOG	PORTUGAL
6	FRAUNHOFER GESELLSCHAFT ZUR FORDERUNG DER ANGEWANDTEN FORSCHUNG EV	FRAUNHOFER	GERMANY
7	UNIVERSITAT POLITECNICA DE VALENCIA	UPV	SPAIN
8	ARISTOTELIO PANEPISTIMIO THESSALONIKIS	AUTH	GREECE
9	WHITE RESEARCH SRL	WR	BELGIUM
10	FUNDACION EPICA LA FURA DELS BAUS	EPICA	SPAIN
11	ETAIREIA ANAPTYXIS KAI TOURISTIKIS PROVOLIS ATHINON – ANAPTYXIAKI ANONYMOS ETAIREIA ORGANISMOU TOPIKIS AFTODIOIKISIS	ADDMA SA	GREECE
12	GREEN OLIVE FILMS (CYPRUS) LIMITED	GOF	CYPRUS



13	CENTRO DI RICERCHE EUROPEO DI TECNOLOGIE DESIGN E MATERIALI	CETMA	ITALY
14	HYPERTech (CHAIPERTEK) ANONYMOS VIOMICHANIKI EMPORIKI ETAIREIA PLIROFORIKIS KAI NEON TECHNOLOGION	HYPERTech	GREECE

Funding

SCENE has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101095303.

Purpose

The purpose of this Delphi exercise is to gather expert insights on the EU filmmaking industry, market trends, challenges, and policy measures in relation to the integration of digital tools in the filmmaking process. Your responses will contribute to a foresight study, guiding practical policy recommendations for the industry.

Content

In this questionnaire, we seek your expertise to understand market trends, challenges, and opportunities, as well as gather perspectives on policy measures and the integration of digital tools. Your responses will contribute to the foresight study, guiding practical policy recommendations for the filmmaking industry, particularly in the context of emerging technologies explored by the project SCENE. All questions are open-ended, please answer the questions to the best of your ability. We value your expertise and insights.

Participants

You have received this questionnaire by one of our partners within your network of contacts, who has identified you as a stakeholder for the SCENE project.

Participation

Your participation is voluntary. You have the right to refuse to participate and to withdraw your data or consent to process it at any time without any consequences. You do not have to answer all the questions.

Benefits

Your expertise will help us produce research outcomes that solve real-world problems and have a positive impact on your domain. You will not be financially compensated for your time and effort.

Types of Data Collected:

Participant Details: Position, Organization, Expertise.

Responses to Open-ended Questions: Perspectives on market sustainability, policy measures, digital tools integration, and emerging technologies.

Personal Data

No personal information that could be used to directly identify you (name, email address, phone number, etc.) is collected. Furthermore, your name or email will not be stored during correspondence and will not be linked with the research materials, as the researchers are interested in the content in general, and not in any individual's values or choices.

You directly provide the following data by completing the survey:

- the type of the organisation you belong to;



- your duties within your organisation, if it is related to the filmmaking industry;
- your opinion on EU's filmmaking industry trends, policy landscape and the adoption of digital tools;

Data Processing

Identifiers (eg. Your organization's name) will be kept confidential, and responses will be anonymized during the analysis phase. Responses will be analyzed in aggregate form, and no individual participant's data will be singled out. Only summarised/aggregated information will be reported. All data will be securely stored, only researchers involved in the SCENE project will have access to the data for analysis purposes.

Security

The Consortium has the infrastructure needed to secure the collected data. Access is protected with login details and will be granted only to the researchers who lead the research activities and will act as the Data Processors.

Confidentiality

Your completed response form will be treated as confidential information. The Consortium will not share the raw information you provide with any other external entity (e.g., companies, organisations, etc.).

Retention

The Consortium will keep your response form for no longer than the duration of the SCENE project plus five years. Once this time period has expired, all individual response forms will be deleted.

Results

Your contribution will be used to the foresight study to understand market trends, challenges, and opportunities, guiding practical policy recommendations for the filmmaking industry, particularly in the context of emerging technologies explored by the project SCENE. The anonymised summarised/aggregated information will be submitted to the European Commission as part of public reports and will be used to write articles for peer-reviewed journals and relevant industry magazines, for presentations at conferences and workshops and in the promotion of SCENE in general.

Risks

No significant or likely risks have been identified in relation to your participation as your data privacy, confidentiality and anonymity have been taken into account and the nature of the questions does not invite any controversial answers that could cause harm, disadvantage or discomfort. In the highly unlikely event that such an opinion is submitted as a response to an open-ended question that could potentially be attributed to a specific participant based on the uniqueness of their role within an organisation category it will either be aggregated or ignored altogether.

Your Rights

Every participant is entitled to the following rights:

The right to access – You have the right to obtain from the Data Controller confirmation as to whether or not personal data concerning you are being processed as well as any information related to the processing. You have the right to request for copies of your personal data. The data controller will use all reasonable measures to verify the identity of a data subject who requests access but will not retain personal data for the sole purpose of being able to react to potential requests.



The right to rectification – You have the right to request that the Data Controller corrects any information you believe is inaccurate. You also have the right to request the controller to complete the information you believe is incomplete.

The right to erasure – You have the right to have the Data Controller erase your data; this will not have any effect on any summarised results or research findings that have already been published.

The right to restrict processing – You have the right to restrict the processing of your personal data; this will not have any effect on any summarised results or research findings that have already been published.

The right to object to processing – You have the right to object to the processing of your personal data; this will not have any effect on any summarised results or research findings that have already been published.

The right to data portability – You have the right to request that the Data Controller transfers the data that we have collected to another organisation, or directly to you; this will not have any effect on any summarised results or research findings that have already been published.

The right to lodge a complaint with a supervisory authority.

If you make a request, you will get a response within one month.

Consent

- I am 18 years or older and competent to provide consent.
- I was informed about the aims of the research project, the purpose and content of the questionnaire, the type of the processed data, the data management and protection procedures, and the risks to my rights and freedoms.
- I voluntarily agree to participate in this research study by contributing to this questionnaire.
- I have read and understood the information; any questions I had were answered satisfactorily.
- I had sufficient time to decide whether I would participate or not.
- I understand that even if I agree to participate now, I am free to withdraw at any time or refuse to answer any question, without any consequences of any kind.
- I understand that at any time I can withdraw my permission to process the data I have provided and that this cannot apply to results that have already been published.
- I understand that all information I provide will be anonymised, securely stored and treated confidentially.
- I have been informed about my rights to access/ rectification/ erasure/ restriction of processing/ object to processing/ data portability/ withdraw consent/ lodge a complaint with a supervisory authority.
- I am free to contact any of the people involved in the research, through the contact details that have already been provided to me, in order to seek further clarification and information.

I confirm all the above statements and agree to the processing of personal data relating to me.

By proceeding with the questionnaire, you indicate your informed consent to participate in the Delphi exercise for the SCENE project.

Contact

If you have any questions about the information that has been provided, our privacy policy, the data we hold on you, or you would like to exercise one of your data-protection rights please do not hesitate to contact the questionnaire's Data Controllers.

If you have a complaint or something to report please contact the SCENE Ethics and Data Manager.



Name	Role	Organisation	email
	Data Controller		
Carlos Palau	SCENE Legal, Security and Ethical Issues Manager	UPV	cpalau@dcom.upv.es

I have read and fully understand all the information about the questionnaire and my participation.

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