

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

Grant Agreement No 101095303

DELIVERABLE D2.1:

SCENE use case definition & Application scenarios
Work Package: 2

LEAD BENEFICIARY:

Athens Development and Destination Management Agency (ADDMA)

Delivery Date: 15.11.2024



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	D2.2
Deliverable name	SCENE use case definition & Application scenarios
Lead beneficiary	ADDMA
WP	2
Related task(s)	T2.1 Use Cases Definition & Application Scenarios
Type	PU
Reviewers (Organisation)	CERTH, DTT
Delivery date	15.11.2024
Main author(s)	ADDMA, CERTH
Contributor(s)	GOF, CETMA

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	15/10/2024	Preparation of the first draft of the deliverable	ADDMA
v0.2	18/10/2024	1 st review of the draft deliverable	CERTH
v0.3	30/10/2024	Contribution received from CETMA & GOF	CETMA & GOF
v0.4	7/11/2024	2 nd review of the deliverable	CERTH, DTT
V1.0	13/11/2024	Final draft of the deliverable ready for submission	CERTH



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Abbreviations

Abbreviations	Full name
WP	Work Package
D	Deliverable
IPR	intellectual property rights



Executive Summary

The deliverable D2.1 of the SCENE project focuses on defining the use cases and application scenarios for the SCENE platform, a comprehensive solution aimed at supporting the European filmmaking industry. The deliverable outlines the key tasks involved in identifying stakeholders' needs, which are integral to the development of the platform's functionalities and tools. The use cases are developed through participatory design processes, involving input from production companies, location managers, artistic directors, and other industry professionals.

The deliverable includes needs analysis, detailed operational scenarios, optimization criteria, and technical constraints to ensure the platform's usability and accessibility across different filmmaking stages—pre-production, production, and post-production. The participatory approach helps the project team to align the platform with real-world user requirements, ensuring its practicality for filmmakers, distributors, and investors. It also involves active stakeholder engagement, such as interviews and focus groups, to develop tools for location scouting, audience-building, content distribution, and blockchain-based intellectual property rights (IPR) management.

The result is a set of detailed use cases that describe how various stakeholders will interact with the platform and the technological modules it supports. These scenarios provide a foundation for the project's pilots, which will test and validate the SCENE platform's functionality, ensuring it addresses the needs of the modern European filmmaking industry.



1. Introduction

The deliverable D2.1 establishes the framework for how we will bring our unique technologies to life. This document focusses on describing particular use cases and situations that will guide our future work. It provides the groundwork for how the project will use modern technologies like cognitive AI and multidimensional data lakes to transform the way films are created and delivered, all while promoting Europe's rich cultural history. D2.1 guarantees that the technologies we create are not just cutting-edge but also anchored in real-world demands, resulting in a significant influence on the European film industry.

1.1 Purpose & Scope

The purpose of Deliverable D2.1 is to clearly define the various use cases that will drive the SCENE project's innovations and help us bring these technologies into practical use. This document serves as a blueprint for how we'll implement our ideas across different pilot sites, each offering unique environments and challenges. These pilot sites are not just theoretical; they represent real-world scenarios where the project's solutions—such as AI-driven tools and enhanced 3D modelling - will be tested and refined.

The scope of D2.1 covers more than just technical details; it's about showing how our work will have a tangible impact. Each pilot site has been carefully selected to showcase the diversity of Europe's cultural heritage and how our technologies can support filmmakers in accessing and utilizing these cultural assets in creative and meaningful ways. Whether it's using 3D digital models of historic sites or leveraging AI to better understand audience preferences, the scenarios outlined in this deliverable are designed to ensure that our work is relevant, impactful, and respectful of the cultural context in which it operates.

By focusing on real-world use cases, D2.1 emphasizes how the SCENE platform will be applied throughout the filmmaking process—from the early planning stages all the way through to post-production and distribution. More specifically, this deliverable presents the stakeholders that will participate in each scenario of the pilot cases, presents how the stakeholders were engaged to provide requirements (D2.3) and provide information on the design of the scenarios for each pilot.

An important comment raised on D2.2 about the stakeholders' roles definition has been addressed in this deliverable. Defining each stakeholders' roles, responsibilities, and interactions with SCENE's platform, described in D2.1, enhances the understanding of workflow dynamics and dependencies within each pilot site. This clarification can help inform both design and testing, ensuring that each actor's experience is aligned with the intended project outcomes.

The scenarios outlined in the deliverable D2.1 have been carefully selected to focus on requirements of high priority and to align with the specific needs of each pilot site. By concentrating on these scenarios, the deliverable ensures that the most impactful functionalities are identified and targeted for development. These scenarios capture both core requirements essential to the project's success and practical needs directly relevant to each pilot case, ensuring that SCENE's solutions are developed in a way that is not only feasible but also meaningful and beneficial to real-world use. This prioritization approach enhances the practicality of implementation while maximizing the project's relevance across diverse cultural contexts.

The Validation Pilot Plan for the SCENE project is designed to ensure that the project's technological innovations fulfil high-priority requirements, align with real-world needs, and are ready for broader application across diverse cultural contexts. The primary objectives of this validation plan are threefold: to confirm that SCENE's tools and functionalities meet the critical requirements outlined in Deliverable D2.3, to assess the technologies' applicability within the unique environments of each pilot site, and to collect valuable feedback from end-users. This feedback will serve as an essential component in refining SCENE's

offerings and improving usability, ensuring that the technologies are both effective and meaningful for diverse user groups. The validation plan is presented in D5.2.

1.2 Relation with other deliverables

This section presents the relationship between D2.1 deliverable with other deliverables of the SCENE project. Deliverable 2.1 is centrally positioned (Figure 1) and is influenced by several preceding deliverables. Initially, D2.1 will receive input from D2.3, as based on the participatory approach applied for the scenarios design and use cases definition for each pilot. In addition, it is related with D2.7 – “SCENE Reference Architecture. R2”, presenting the specifications for the SCENE platform and its components.

The output of this deliverable influences subsequent deliverables, particularly within WP5, and more specifically D5.1 – “SCENE testing & system integration.R1” and D5.2 – “SCENE pilots setup & validation plan.R1”, as based on the scenarios and use cases presented here, the integration plan and pilot setup will be made.

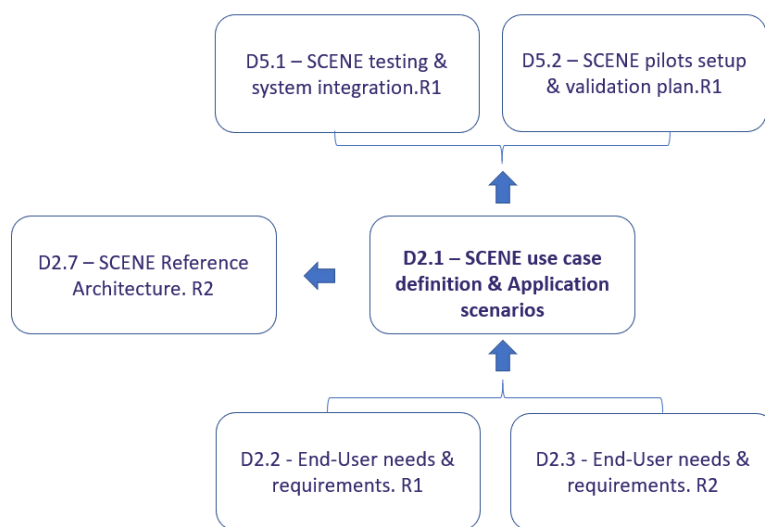


Figure 1: Relations of D2.1 with other deliverables

1.3 Structure of the deliverable

This deliverable is structured and organized as follows. Section 1 provides the scope of this deliverable in detail, its relation with other deliverables and a brief description of the deliverable’s structure. Section 2 introduces the scope and objective of the SCENE project, presenting the tools of the SCENE platform. Section 3 presents the participatory design method followed for the definition of the scenarios and use cases, while section 4 and 5 present the pilot cases, their scope and locations along with the scenarios defined per use case. Finally, section 6 concludes this deliverable report by presenting the outcomes of the requirement collection process and the next steps of the project.

2. SCENE Project objectives

The SCENE project intends to improve the European filmmaking industry by focusing on two key pillars: semantically cognitive AI technology and European cultural assets that are consistent with European values and environmental legislation. This project will:

1. Develop innovative technologies and services for the entire filmmaking pipeline, from planning to audience viewing.



2. Facilitate film production and editing with efficient simulations and novel assessment mechanisms during production and post-production stages.
3. Enrich existing data lakes with high-quality, editable 3D digital models of European cultural sites, improving accessibility with multi-dimensional knowledge graphs that carry location- and cultural-aware information.
4. Enable smart, privacy-preserving interaction between industry stakeholders and audiences, allowing for proactive sensing of audience preferences and identifying the best advertisement and distribution channels.

To achieve these, a number of tools will be implemented throughout the lifetime of the project, where each one of them aims to build upon the current perspectives used in the filmmaking industry, and enhance them in order to achieve the project's goals and meet users' requirements set in D2.3.

The success of these goals will be measured by several KPIs. First, the time saved in pre-production and production phases by using digital models of cultural heritage sites for location scouting will be an important metric. By offering filmmakers 3D reconstructions and simulation tools that accurately model lighting, acoustics, and environmental factors, SCENE reduces the need for physical site visits, cutting down on logistical costs and improving planning efficiency. Another KPI is adoption rates of these tools by filmmakers. The platform's success will depend on how widely these tools are used by industry professionals. Feedback from filmmakers regarding the ease of use and functionality of the simulation engines and post-production utilities will also provide insight into how effectively SCENE enhances production workflows. A detailed presentation of the KPIs defined is available in D5.2.

This section presents in detail the tools that will be implemented throughout the project, allowing thus the reader to understand their use and scope before the presentation of the scenarios and use cases.

2.1 Data Lakes & Ontologies

The goal of the SCENE project is to enhance accessibility, organization, and usability of vast multimedia data collections - data lakes used in the film industry. By developing a comprehensive ontology called SCENE-O, the project aims to create a unified framework that allows filmmakers and stakeholders to efficiently search, classify, and retrieve multimedia content, streamlining workflows across all stages of film production.

To achieve this, SCENE-O will begin by analyzing existing global film-related data lakes, examining their structure, content, and usability. This analysis will allow the team to design a standardized ontology that aligns with current industry standards, such as JSON-LD, ensuring interoperability across diverse datasets. With well-defined tagging rules, SCENE-O will support dynamic data annotations, enabling the classification and search of assets based on specific attributes, making content more accessible and discoverable.

In addition to basic data organization, SCENE-O will enrich multimedia content with location and region-specific information, enhancing the cultural and contextual value of film-related assets. By leveraging advanced Neuro-Symbolic AI, the ontology will automate data mapping and alignment, integrating these various data sources into a single, cohesive knowledge graph. This holistic approach facilitates "single point" access to data, promoting efficient retrieval and supporting informed decision-making. Ultimately, SCENE-O will provide a scalable, multi-dimensional framework that transforms film-related data into an organized, easy-to-navigate system, significantly enhancing the way data is accessed and utilized throughout the filmmaking pipeline.



2.2 Media Asset Manager (MAM)

The Media Asset Manager (MAM) in the SCENE project is an advanced tool designed to streamline the management of multimedia content throughout the filmmaking process. It enables format-agnostic content ingestion, categorization, and collection creation, making it easy to organize and retrieve assets. The MAM also supports audience engagement with actionable triggers, content licensing, and monetization options, along with features for audience configuration and parental controls.

Additionally, the MAM offers non-linear, metadata-driven navigation and integrates with the SCENE platform's IP licensing module to ensure secure handling of intellectual property. By linking with the SCENE-O ontology, it standardizes data terminology, making it easier to access and utilize content. The MAM also supports the use of 3D models of cultural heritage sites, helping filmmakers simulate real-world conditions. Overall, the MAM centralizes multimedia assets, enhances accessibility, and supports legal and financial aspects of film production.

2.3 3D Reconstruction

One of SCENE's key objectives is the ability of creating highly accurate 3D reconstructions of cultural heritage sites. This technology will provide filmmakers with the ability to simulate filming conditions in these locations before production even begins, saving time and resources.

SCENE will use a combination of terrestrial laser scanning (TLS) and high-dynamic range (HDR) photogrammetry to capture detailed models of both interior and exterior spaces. The data collected will be used to develop realistic 3D models that can be rendered in real-time, allowing stakeholders to virtually explore sites and simulate technical setups (e.g., lighting and camera angles) before filming.

The 3D models will also be integrated into the platform's data lakes, enriching the knowledge graph with new spatial and cultural dimensions. Additionally, filmmakers will be able to manipulate lighting and audio conditions, further optimizing the production process. This level of simulation will allow for precise adjustments to be made, such as testing different lighting scenarios or determining how sound will behave in the environment, making production more efficient and adaptable.

2.4 IPR Preservation with Blockchain Technologies

The IPR Preservation with Blockchain Technologies tool in the SCENE project is designed to protect intellectual property rights in filmmaking by using blockchain to create a secure, transparent system for licensing and asset management. It offers decentralized, legally binding licensing through smart contracts and Ricardian contracts, ensuring that creators' rights are upheld without intermediaries.

This tool also enables detailed tracking of content interactions, creating an auditable record of usage to prevent piracy and unauthorized distribution. By incorporating Non-Fungible Tokens (NFTs), filmmakers can tokenize exclusive production assets, providing new revenue streams and unique engagement opportunities for audiences.

Additionally, the platform explores a blockchain-based economic model that directly rewards creators based on content performance, promoting financial sustainability. This comprehensive framework not only safeguards intellectual property but also enhances monetization and audience connection, fostering a more supportive ecosystem for the film industry.



2.5 Location Scouting Tool

In the SCENE project one of the primary goals is to enhance the filmmaking industry by making it easier for filmmakers to find and select ideal shooting locations. The Location Scouting Tool plays a crucial role in achieving this by providing an efficient and comprehensive platform that simplifies the entire location scouting process. Through this tool, filmmakers can easily access a wide range of potential sites, including cultural heritage locations, public spaces, industrial buildings, natural landscapes, monuments, restaurants, and other nearby facilities. By streamlining this process, the SCENE project ensures that filmmakers and location providers can collaborate more effectively to find the perfect locations that meet both creative and logistical requirements.

The tool is designed not only to assist filmmakers but also to serve a broad range of users in the film industry, such as location providers, cultural heritage managers, and tourism boards. Location providers, including real estate agencies and city film offices, can register their sites on the platform, providing essential metadata, geographical details, and information about available facilities. This promotes underutilized or lesser-known locations and helps increase their visibility for international productions, which can boost local economies and cultural preservation.

Those goals will be made possible through the multimedia database provided by the Location Scouting Tool, which includes photos, 360-degree images, videos, and metadata automatically generated using deep learning techniques. This metadata offers essential information about each location, such as architectural styles, emotional associations, materials, and historical significance, allowing filmmakers to filter locations and find the most suitable options for their production needs. Additionally, each location's data includes logistical details like nearby accommodations, catering, equipment rentals, and proximity to key sites, helping filmmakers plan shoots efficiently and simplify the overall production process.

2.6 Audience Building

The Audience Building Tool in the SCENE project empowers filmmakers to engage audiences, assess campaign impact, and attract funding for productions. It integrates social media and gamification techniques, allowing filmmakers to create and manage multi-platform campaigns while tracking key performance indicators (KPIs) on a dashboard that visualizes audience engagement metrics. This tool supports audience growth at each production stage by providing actionable insights that enhance campaign management and understanding of audience behaviours.

The tool's gamification engine uses self-learning algorithms to recommend tailored engagement strategies for each audience and production. Filmmakers can create interactive campaigns, such as contests or rewards, to boost audience involvement through activities like viewing, sharing, and commenting. The tool also supports NFTs linked to exclusive content, allowing fans to contribute directly to production via crowdfunding.

The goal is to provide data-driven campaigns that enhance audience engagement and funding opportunities. To achieve this, the Audience Building Tool offers a "showroom" feature for funding agencies, allowing them to explore films, view KPIs, and track producer rankings in a gamified context. An AI-based Audience Preferences Scouting module further supports this by monitoring trending topics on platforms like Twitter and YouTube, giving filmmakers timely insights into audience interests.

The effectiveness of this tool will be evaluated based on metrics such as increased audience interaction with films distributed through the SCENE platform. KPIs will include the accuracy of audience recommendations, measured by the percentage of users who engage with recommended films and provide positive feedback.



Audience growth in targeted demographics, particularly in regions that may have had lower engagement with European cultural films, will also serve as a critical measure of success. The ability to track audience preferences in real-time, using data analytics, and tailor film recommendations accordingly will ensure that content aligns with viewer interests, thereby increasing audience retention and satisfaction.

2.7 Lighting & Audio Simulation modules

The SCENE project's Lighting & Audio Simulation modules empower filmmakers to pre-visualize and optimize setups, ensuring high-quality outcomes by simulating environmental conditions before filming begins. These modules allow filmmakers to experiment with different lighting and audio scenarios, fine-tuning elements to achieve the desired visual and auditory effects, all while minimizing on-set adjustments and saving valuable resources.

With the Lighting Simulation Module, filmmakers can adjust factors like intensity, angle, and color to see how various lighting setups affect a scene's atmosphere. This is particularly beneficial in challenging or unique environments, as it provides a preview that guides equipment placement and lighting choices to bring out the intended visual impact.

The Audio Simulation Module offers the ability to simulate and refine acoustic properties based on the filming environment. By modeling factors like reverberation and spatial sound distribution, the module helps determine if a location's acoustics are suitable or if additional sound treatment is required. Supporting multiple audio formats, including mono, stereo, binaural, and multichannel (such as Dolby Atmos). It ensures flexibility across various playback environments and maintains high audio quality.

Together, the Lighting & Audio Simulation modules streamline production planning, allowing filmmakers to achieve optimal audio-visual quality aligned with their creative vision, while minimizing costly adjustments during filming. Provide personalized film recommendations by matching films with individual audience preferences using AI. Integrate all these technologies into a unique SCENE platform, offering a proof-of-concept that aims to lead to scientific, commercial, business, and policy advancements in the film industry, particularly in the post-COVID era.

2.8 Distribution Engine and Recommendation System

The SCENE project offers a powerful Distribution Engine and Recommendation System designed to maximize film reach by identifying ideal audiences and platforms. This tool analyses key film attributes—such as genre, cast, and director—alongside social media and viewer data to create audience clusters and recommend optimal distribution channels, including Netflix, Amazon Prime, and YouTube. Format-agnostic, the Distribution Engine allows filmmakers to produce content in ABR, VBR, or CBR formats, enabling them to quickly launch OTT channels with adaptive DRM options for streaming or on-demand viewing. This functionality ensures that audiences can watch content instantly or save it for later, enhancing accessibility. The integrated Recommendation System clusters audiences based on preferences, demographics, and social activity, generating representative viewer profiles within each cluster. These profiles guide targeted content recommendations and allow filmmakers to refine their distribution strategies, boosting engagement and impact across diverse viewer groups.

SCENE also aims to improve film distribution by leveraging audience insights and data-driven tools to ensure that European films reach the right markets and viewers. A major KPI for this goal is the increase in film reach, specifically how well the distribution engine helps films access wider, more diverse audiences. The number of successful matches between films and distribution channels based on data-driven insights will demonstrate the effectiveness of the SCENE platform in improving market access. Another important KPI will



be the reduction in distribution costs as filmmakers and distributors rely on SCENE's recommendation systems to target the most appropriate channels, avoiding costly blanket distribution strategies. Ultimately, the impact on revenue generation for films distributed through SCENE will be a key performance indicator, measuring the financial benefits of the platform's advanced targeting capabilities.

Last but not least, one of the core objectives of the SCENE project is to promote and preserve European cultural heritage by making it more accessible and visible in the film production process. KPIs for this goal include the number of cultural heritage assets digitized and made available through the SCENE platform for use in film production. Another important metric is the extent of heritage site representation in the films produced, which reflects the platform's success in integrating cultural heritage into modern storytelling. The diversity of heritage sites used in film production will also be monitored, ensuring that lesser-known or underrepresented sites are given visibility. Additionally, SCENE will assess audience awareness and appreciation of European cultural heritage through post-viewing surveys and feedback mechanisms. The positive cultural impact of films utilizing SCENE's tools, measured by audience engagement with heritage-related content, will provide a clear indication of the project's contribution to preserving Europe's cultural legacy in the digital age.

Each of these KPIs is essential to understanding how effectively SCENE achieves its ambitious goals of transforming the European film industry, enhancing audience engagement, and promoting cultural heritage through innovative technologies.

3. Participatory design method

This chapter provides an in-depth explanation of the participatory design method followed for the definition of the scenarios and use cases of each pilot case. Participatory design is a methodology that involves end user and stakeholders directly in the design process. The aim of this is to ensure that the final SCENE platform reflects their needs, preferences and experiences of its stakeholders. The stakeholders, particularly those who will ultimately use the end product, should have a significant role in shaping its development and design [1]. The collaborative nature of this approach, fosters innovation that is more likely to succeed, considering it aligns closely with the reality of the end users.

The participatory design method ensures that the focus is on the stakeholders and the future end users, instead of the developers. It emphasizes an understanding of the user's needs, preferences, abilities and context before and during the creation of the product or service. This starkly differs from traditional design approaches that mostly focus on technical feasibility or the preferences of the designers. In participatory design, future end users are not passive recipients. Instead, they are at the forefront, and act as active contributors. This approach is particularly beneficial because users bring practical insights that the designer might overlook.

At its core, this method is the user-centered approach that shifts the focus from the designers' or developers' perspectives to that of the end users. Instead of assuming what the users' needs are, participatory design engages them in co-creating solutions, and mitigating future problems. This ensures that their experiences and needs are an integral part of the design process. Experience from different sectors, showcase an extensive, well planned, systematic participation of end users and stakeholders can help create successful digital services [2].

The process is iterative [3] and evolves repetitive steps of prototyping, testing, feedback gathering and refining using the opinions of the end users. This allows for continuous adjustments and improvements, in order to ensure that the final SCENE platform better meets user requirements. Early-stage prototypes are



extremely crucial even if they are in a rough state, in order to solicit meaningful feedback that informs the future development. Using interviews with different stakeholders, we are able to inform them about the capabilities of the SCENE platform, acquire their feedback, and incorporate their views into the final design.

Participatory design encourages inclusive participation, drawing stakeholders and users from different and various backgrounds in inclusive participation to provide a diversity of insights [4]. This approach is particularly valuable in complex contexts where different user groups have unique needs. For instance, in a digital innovation project both technical experts and non-technical users help to balance the feasibility of this endeavor with the usability. An instance of inclusive participation in our design process is the user stories that are being presented in D2.3. As an example, editors indicated that they would use the platform to organize and access raw video footage, audio tracks and visual effects assets. They highlighted their need for an advanced tagging system, so that easier retrieval of such media is possible, a centralized media access point, and the possibility of real-time collaboration, so that they are able to share drafts and incorporate feedback in a seamless manner.

3.1 Methodology for Use Case Definition

The methodology for defining use cases in the SCENE project is a carefully structured process, based on the participatory design method, that ensures the development of relevant, practical, and useful scenarios for the application of the project's cutting-edge technologies. By focusing on real-world challenges and opportunities within the European film and cultural heritage sectors, this approach ensures that the use cases not only showcase the potential of SCENE's AI-driven tools and data lakes but also address the actual needs of stakeholders, from filmmakers to cultural institutions.

The use case definition process is iterative and collaborative, combining stakeholder insights, technical considerations, and contextual analysis. This methodology allows the identification of scenarios where SCENE's technologies can be most impactful, enhancing both the creative and operational aspects of film production and distribution. Ultimately, the goal is to provide a practical framework where innovative tools can be tested, validated, and refined, ensuring the successful application of the SCENE platform in preserving and promoting European cultural heritage. To achieve this, the following steps are required:

1. Stakeholder Engagement

The foundation of each use case begins with active engagement from stakeholders. This includes a broad spectrum of participants—filmmakers, cultural heritage professionals, technology developers, and even representatives of the audience. By consulting those directly involved in the industry, the project ensures that the use cases address genuine needs and practical challenges, making the final solutions highly relevant and beneficial to all involved. This collaboration also helps in understanding the diverse expectations from the SCENE platform.

2. Contextual Analysis of Pilot Sites

Each use case is grounded in a thorough contextual analysis of the pilot sites, which represent a range of European cultural heritage settings. This step ensures that the specific environments, cultural contexts, and technical infrastructures of each site are taken into account. The diverse cultural and operational characteristics of these sites help shape use cases that are both realistic and adaptable to a variety of conditions. By tailoring the use cases to each site's unique attributes, SCENE maximizes its potential impact across different settings.

3. Clear Definition of Objectives



Defining clear and measurable objectives is essential for ensuring that each use case aligns with SCENE's broader goals. These objectives typically revolve around improving access to and utilization of cultural heritage in film production, enhancing the audience experience through personalized content, and streamlining production workflows using advanced technologies like AI, 3D modeling, and data lakes. By setting these specific goals, the project ensures that each use case is purposeful and contributes directly to the overarching aims of SCENE.

4. Scenario Definition

After defining the objectives, specific scenarios are developed to illustrate how SCENE's technologies will be applied in practical settings. Each scenario outlines the detailed steps of how the tools—such as AI-driven simulations or 3D models—will be used in the filmmaking process. For example, a scenario might depict a director leveraging 3D digital reconstructions of a historical site during pre-production, or a distribution company using SCENE's recommendation engine to reach targeted audiences. These scenarios provide a clear vision of how the technologies will function in real-life applications.

5. Mapping Technology to Use Cases

A crucial step in the methodology involves aligning the SCENE technologies with each use case. This process identifies which specific tools and functionalities will be utilized in each scenario and how they will be integrated to achieve the desired outcomes. Whether it's the use of cognitive AI for audience insights or advanced data lakes for managing digital content, this step ensures that the use cases make full use of SCENE's technological capabilities while addressing the core needs of the industry.

6. Establishing Validation Criteria

For each use case, success metrics and validation criteria have been defined to measure performance and impact. These criteria are tailored to assess both technical effectiveness and user satisfaction. Metrics may include improvements in audience engagement, efficiency in production workflows, or the quality of cultural heritage representations. By establishing these validation points, the project ensures that each use case can be quantitatively evaluated, making it easier to refine and improve the scenarios as needed.

7. Iterative Testing and Continuous Refinement

Once implemented in pilot sites, the use cases undergo an iterative process of testing and refinement. Feedback from real-world applications is collected from stakeholders and used to adjust and improve the scenarios. This iterative cycle ensures that the use cases evolve in response to both technical performance and stakeholder needs, leading to robust, effective solutions that are ready for broader application across the industry.

In the SCENE project, participatory design was implemented using questionnaires and direct interviews with film makers and various related stakeholders. Through these interviews, that were organized by ADDMA, user stories were collected, while requirements were also captured as presented in D2.2 and D2.3. As shown in D2.2, there were two different rounds of questionnaires, that were distributed to film making stakeholders, including location scouters, audio and visual effects engineers, distributors and producers. In terms of methodology, the feedback and user stories that were gathered from the two rounds of the questionnaires were crucial in order to facilitate discussion on the main areas of interest for the development of the SCENE project. The feedback collected from these questionnaires and user stories highlights the stakeholder's point of view, how they intend to use the SCENE platform, what functionalities they prefer, the challenges they face during different stages of filming, and showcase how each stakeholder would use the SCENE platform to enhance their workflow and ensure a streamlined production process.



At this point it needs to be mentioned that in the drafting and development of the second version of the questionnaires there was an all-inclusive participation. All SCENE partners were involved, spanning various background, and different disciplines. This is a crucial and important element in the co creation of the surveys. The inclusion of the perspective of a diverse set of end users, researchers and industry experts, the design process aimed to enhance the effectiveness and the relevance of the questions, in order to acquire better feedback. Participants were invited to suggests topics and different question that they considered as important. These were then refined and incorporated into the questionnaire by the ADDMA and GOF. Additionally, ADDMA created a new and simplified structure and approach of the questionnaires. The questions were shorter with reduced technical language, better phrasing and they were tailored made based on the occupational status of the end users.

3.2 Stakeholder profiles

Clarity, inclusion, and efficient communication throughout the design process depend on clearly defining the responsibilities of stakeholders in participatory design. Realistic expectations on the degree and kind of involvement of each group are set by clearly defined roles, which also serve to eliminate uncertainty about duties by letting stakeholders know who to contact for certain problems. The effective use of time and resources is supported by this framework. Determining roles also guarantees that a range of viewpoints are recorded, including distinct opinions from managers, designers, end users, and technical personnel. This results in a more thorough comprehension of the design challenge and encourages creative solutions.

Because people are more likely to feel appreciated and motivated when they recognize the significance of their contribution, roles also improve stakeholder involvement and responsibility. Passive engagement is avoided and persistent commitment is encouraged by this sense of ownership. Furthermore, by prohibiting any one group from controlling the process, well defined responsibilities provide equitable representation and cooperation and establish a balanced power dynamic. Defined roles facilitate decision-making by defining distinct areas of responsibility and accountability. This makes it easier for stakeholders to monitor progress and make well-informed decisions, which eventually results in a more effective and equitable design outcome. This section presents the roles and involvement of the stakeholders of the SCENE platform that participated in the scenarios design and definition process. These stakeholders are:

- **Filmmakers:**

Role: Primary users of the SCENE platform, filmmakers will utilize the location scouting, simulation engines, and post-production utilities to enhance their workflow and creativity.

Involvement: They are directly involved in defining the functional needs of the platform and provide feedback on the tools during the pilot phases. They will benefit from streamlined production processes and enhanced access to cultural heritage sites.

- **Cultural Heritage Experts:**

Role: They will provide the necessary information and data related to the heritage sites that are being digitized and made available through the platform.

Involvement: These experts ensure that the digital models and cultural data are accurate and respectfully represent the heritage in a way that can be utilized by filmmakers without losing cultural integrity.

- **Technology Providers:**

Role: Responsible for the development of SCENE's core technologies, including AI, simulation engines, data lakes, and the recommender system.



Involvement: They will work on the technical side of the platform, ensuring that all functionalities—from audience analytics to distribution tools—are implemented and optimized.

- **Distributors:**

Role: Distributors will use the platform’s distribution engine and audience-building tools to target the right markets and channels for European films.

Involvement: Their role is critical in the post-production and distribution phases, ensuring that films reach their intended audiences efficiently through data-driven decisions.

- **Audience:**

Role: End users who benefit from the personalized film recommendations provided by the recommender system.

Involvement: Audience feedback, preferences, and engagement data will feed back into the system to improve content targeting and engagement strategies. They play an indirect but crucial role in shaping the success of the platform.

- **Cultural Institutions:**

Role: These stakeholders ensure that SCENE’s use of cultural assets aligns with the mission of preserving and promoting European heritage.

Involvement: They will contribute cultural data and collaborate on the development of guidelines for representing heritage assets in films.

4. Contextual Analysis of Pilot Sites

This section provides an overview of the contextual analysis conducted for each pilot site involved in the project. Given that the pilot sites represent a variety of European cultural heritage settings, this analysis forms a foundational step in grounding each use case within the unique environments, cultural contexts, and technical infrastructures of the respective sites. By carefully examining these diverse characteristics, the project ensures that the use cases developed are not only realistic and aligned with the specific needs and constraints of each site but also adaptable to a wide range of conditions. Through this tailored approach, SCENE aims to enhance its relevance and effectiveness, maximizing its potential impact across different cultural heritage contexts.

This section begins with an overview of the use cases drafted based on the Functional Requirements (FRs) of the platform. The use cases are divided into main groups, each addressing specific needs such as location scouting, audience building, environmental simulations, post-production, distribution, and personalized recommendations. The section also details several pilot cases that demonstrate the practical application of these tools in real-world settings, and showcases how SCENE’s tools streamline pre-production, improve post-production quality, and facilitate efficient distribution, thereby meeting the needs of the European film industry.

4.1 Pilot 1: Greece

The SCENE project aims to enhance the European film industry by integrating cutting-edge technologies across various phases of film production and distribution. Pilot 1 in Athens focuses on leveraging the city’s cultural heritage through the use of cognitive AI tools to streamline pre-production, post-production, and distribution processes. The goal of Pilot 1 is to create a competitive filmmaking environment in Athens that highlights the city’s iconic locations, contributing to its global reputation as a film destination.



Pre-Production Phase: Location Scouting and Audience Engagement

The pre-production phase for the Greece Pilot begins with the Location Manager utilizing the Location Scouting Tool. This tool enables the manager to scout and assess four filming locations:

- Athens City Hall
- The National Garden
- The First Cemetery of Athens
- Olympia Municipal Music Theatre "Maria Callas."

Each of these locations represents an essential part of Athens' cultural identity and provides unique logistical opportunities and challenges. The **Location Scouting Tool** provides detailed insights into lighting conditions, accessibility, and permissions for each site, allowing the team to visualize the scenes efficiently and plan an optimal shooting schedule.

The Producer oversees this phase to ensure the project adheres to logistical constraints and stays within budget. Additionally, the Audience Building Tool plays a critical role in this phase by allowing the creation of teaser content based on location visuals. These teasers are shared on social media and promoted with the help of municipal partners, sparking interest in the film before production even begins.

Post-Production Phase: Lighting and Audio Adjustments

In the post-production phase, the Director and Audio Engineer leverage the Post Production Effects Tool to enhance the visual and auditory experience of the film. For example:

- In the Olympia Municipal Music Theatre, dramatic lighting adjustments are applied to highlight the grandeur of the venue and emphasize the emotional weight of the musical performances.
- For the First Cemetery of Athens, using the extracted audio quality metrics, audio enhancements, including validated prerecorded sound samples, such as birdsong and the rustling of leaves, are integrated to elevate the natural ambiance, contributing to the scene's solemn tone.
- The National Garden's greenery is color-graded, while lighting adjustments make the sunlight more vivid, enhancing the location's serene atmosphere.
- At Athens City Hall, the focus is on showcasing the building's intricate neoclassical design through sharp lighting enhancements.

The Editor collaborates with the director to ensure that the Post Production effects align with the overall tone and pacing of the film, while the Director of Photography (DP) provides feedback on the lighting adjustments to ensure consistency with the original footage.

Distribution Phase: Managing International Reach

The distribution phase involves using the Distribution Engine to manage the film's release across multiple platforms, such as streaming services, cinemas, and social media, both locally and internationally. The engine tracks viewer engagement and demographic data to gauge the film's impact. The Producer ensures that the distribution strategy aligns with the film's promotional goals, while the Distributors focus on maximizing the film's visibility on international platforms.

Key to this phase is how the film promotes Athens as a filming destination. The data gathered through the Distribution Engine highlights Athens' growing reputation, as demonstrated by the film's performance across different regions and the economic impact on the city.

Pilot 1 focuses on utilizing cognitive AI tools to showcase and leverage the city's cultural heritage, establishing Greece, and specifically in Athens, as a competitive and appealing destination for filmmaking. This pilot site was chosen not only for its iconic historical landmarks but also for its deep cultural significance and its growing technical infrastructure supporting creative industries. By setting the project in Athens, the pilot



aims to harness the city's unique blend of ancient heritage and modern urban life, creating a visually compelling backdrop that enhances the storytelling potential of each production. The pilot thus benefits from Athens' established reputation and aims to amplify it, further contributing to its status as a global film destination.

In the pre-production phase, the Location Scouting Tool allows the location manager to evaluate and select four culturally significant filming sites: Athens City Hall, the National Garden, the First Cemetery of Athens, and the Olympia Municipal Music Theatre "Maria Callas." Each site offers distinct logistical opportunities and challenges tied to Athens' cultural and operational characteristics, such as lighting conditions, accessibility, and permitting processes. The tool provides a tailored view of each location's unique assets, allowing the team to efficiently map out filming logistics and plan a streamlined shooting schedule that respects the historical and environmental considerations of each site. Additionally, the Audience Building Tool plays a crucial role in engaging both local and global audiences by generating teaser content based on these iconic locations. This teaser material, marketed through collaborations with municipal agencies, not only piques curiosity but also fosters an emotional connection to the city's legacy, ensuring that the film's pre-production connects with people all around the world.

4.2 Pilot 2: Cyprus

The focus of the Cyprus' pilot is to explore the filmmaking capabilities of the SCENE platform from the viewpoint of different professionals within the film industry. Through this pilot we'll simulate the creation of a short film, with essential crew members using SCENE tools to accelerate the production process, making it more efficient, affordable, and environmentally friendly. Special emphasis will be placed on enhancing and assessing the pre-production phase.

Pre-Production Phase: Location Scouting and Audience engagement

The Cyprus pilot highlights the pre-production phase as pivotal to showcasing how the SCENE platform can benefit both independent and international film productions by improving efficiency, reducing costs, and minimizing environmental impact.

Following the script's approval and confirmation of funding, the platform's tools will be utilized to their full extent during pre-production. Using SCENE's location scouting capabilities, we search for ideal filming locations.

The Cyprus pilot is designed to explore the SCENE platform's filmmaking capabilities from the perspective of various professionals within the film industry, simulating the production of a short film to assess the platform's impact on efficiency, affordability, and sustainability. Cyprus, known for its diverse landscapes, rich historical backdrop, and growing film industry, presents an ideal setting for this pilot. The island's unique blend of ancient sites and natural beauty adds depth to storytelling, while its emerging technical infrastructure and local support for filmmaking make it an attractive destination for both independent and international film productions. This pilot aims to highlight how the SCENE platform can capitalize on these characteristics to enhance Cyprus's appeal as a viable and eco-friendly filming location.

A central focus of the Cyprus pilot is on the pre-production phase, showcasing SCENE's potential to improve production efficiency while minimizing environmental impact. After finalizing the script and securing funding, essential crew members engage with SCENE's tools to streamline pre-production tasks. The location scouting feature is key in helping the team identify ideal filming spots that align with both the visual needs of the script and Cyprus's distinctive environmental and cultural landscape. This tool allows for an informed selection of sites that may traditionally require extensive travel, reducing the need for physical scouting and thereby



lowering carbon emissions associated with transportation. Additionally, the SCENE platform's audience engagement tools play a strategic role in generating early interest in the film by sharing location previews and production updates, fostering local and international excitement. This efficient, digitally enhanced approach not only cuts costs but also reinforces Cyprus's standing as a sustainable, film-friendly destination.

4.3 Pilot 3: Italy

The Italian pilot in the SCENE project leverages advanced technologies in two culturally and architecturally distinct locations: **De Monti Castle and the Basilica di Santa Caterina d'Alessandria**. These sites offer unique environments that enable testing of SCENE's cutting-edge tools across various stages of film production and distribution, with a dual goal: **promoting Italy's cultural heritage and enhancing global audience engagement**. Through 3D modeling, location scouting tools, Audio & Lighting Simulations, blockchain-based asset management, this pilot aims to streamline workflows, enrich audience experience, and establish these sites as prestigious international filming destinations.

The goal of the Italian pilot is to establish these locations as premier filming destinations, blending their historical significance with modern technology to appeal to an international audience. Key tools will include 3D modeling, blockchain-based IP management, and advanced post-production effects. The aim is to streamline production while enhancing audience engagement and boosting global visibility for Italy's cultural heritage.

The Italian pilot's success relies on a diverse set of stakeholders whose involvement is crucial at every stage:

- **Cultural Heritage Managers:** Oversee conservation at the Basilica and Castel and ensure respectful use of these sites. Their input aids in capturing the historical and cultural essence of these locations.
- **Local Government Authorities:** The municipalities of Galatina and Corigliano d'Otranto are key partners, promoting the sites as film destinations and managing regulatory approvals.
- **Technical Teams from CETMA:** Experts in 3D modeling and digital infrastructure, these teams support SCENE's technological implementation at both sites.
- **Film Production Companies:** Both Italian and international filmmakers involved in using the SCENE platform for location scouting, 3D modeling, and scene composition.
- **Local Community and Tourism Agencies:** Engage the public and enhance the sites' appeal through tourism; will play a key role in audience engagement initiatives.
- **Media Distributors and Streaming Platforms:** Integral for the distribution phase, helping reach targeted global audiences with specialized cultural content.

To optimize engagement, each site's unique characteristics will guide tailored approaches:

- **De Monti Castle:** Host film-centric events such as virtual reality tours, which could engage the local community while promoting heritage through interactive experiences.
- **Santa Caterina d'Alessandria Church:** Leverage partnerships with cultural institutions and art conservators to curate behind-the-scenes features that focus on the Basilica's intricate frescoes. This could include digital exhibitions accessible to both local and international audiences, reinforcing cultural ties.

Local engagement events and educational workshops will encourage stakeholders to explore the cultural and technological dimensions of film production at these heritage sites. Regular feedback loops and community meetings will ensure that the project remains aligned with stakeholder needs and that any concerns are addressed promptly.



A) De Monti Castle, Corigliano D'Otranto

A fortified structure dating back to the 15th century, Castel de Monti embodies the medieval architecture typical of the region. Its strategic design elements, such as battlements, moats, and defensive towers, make it ideal for historical film scenes. The castle's architecture requires precise 3D modeling to capture details that convey its imposing nature and rich history.

- **Cultural Context:** Castel de Monti holds significance as a symbol of local resilience and feudal heritage, attracting visitors interested in medieval history. Its dramatic stonework and isolated rural setting provide a fitting backdrop for historical or fantasy film productions.
- **Technical Infrastructure:** While rustic, the site can be outfitted with SCENE's mobile 3D modeling and UWB tracking systems to support filming. Limited indoor lighting is enhanced with the SCENE lighting simulation tool, allowing filmmakers to visualize potential scene setups in a controlled, digital environment.

B) Santa Caterina d'Alessandria Church

The Basilica is renowned for its 14th-century frescoes and Gothic-Romanesque architectural style. It offers filmmakers a chance to capture detailed religious iconography and expansive vaulting, which add depth to narrative scenes focused on historical or spiritual themes.

- **Cultural Context:** Known as a treasure of southern Italian religious art, the Basilica attracts both pilgrims and art historians. Its frescoed walls and vaulted ceilings are a testament to religious artistry, lending the site an aura of reverence that can enrich film narratives.
- **Technical Infrastructure:** The interior's sensitive artwork calls for non-intrusive technology. SCENE's 3D models enable pre-filming visualization, minimizing physical interaction with the frescoes. Audio simulations can recreate the Basilica's unique acoustics digitally, allowing sound designers to adapt this atmosphere without on-site audio testing.

To gauge the success of the Italian pilot, SCENE will track specific outcomes aligned with each production phase and the unique challenges of each site:

1. Improvement in Cultural Heritage Access and Usage:

- **Metric:** Reduction in on-site location scouting time and increased use of 3D models for remote scouting.
- **Tools:** 3D Modeling and Location Scouting Tool, lighting and audio simulations.
- **Validation Points:** Surveys and time tracking for filmmakers to determine the decrease in physical site visits, along with qualitative feedback on the digital model's usability.

2. Enhanced Audience Experience through Customized Content:

- **Metric:** Viewer engagement rates and positive feedback on location-based content.
- **Tools:** Distribution Engine and Recommendation System, Audience Building Tool.
- **Validation Points:** Track content engagement across platforms, with audience segmentation to assess specific interest in Castel de Monti and the Basilica's cultural themes.

3. Streamlined Production Workflows Using 3D Models:

- **Metric:** Reduced time in scene setup and improved pre-visualization accuracy.
- **Tools:** 3D Modeling, UWB Tracking, Media Asset Manager.
- **Validation Points:** Feedback from directors and production managers on the efficiency of scene planning and reduction in setup revisions.



This pilot through its different scenarios drafted aims to facilitate inclusive film production environments at De Monti Castle and Santa Caterina d’Alessandria, ensuring that all film crew members, including those with disabilities, have equitable access to participate in production activities. This plan leverages SCENE’s technological tools, architectural modifications, and stakeholder support to create adaptable workflows for diverse abilities On-Site Adaptations and Equipment Modifications

For the production phase, several on-site modifications and equipment adjustments will ensure accessible and safe working conditions for disabled crew members at Castel de Monti and the Basilica.

- **Pre-Production Planning for Accessibility**

To promote accessibility from the outset, the pre-production phase will include a comprehensive accessibility assessment and the integration of SCENE’s digital tools for remote visualization and planning.

- **Site-Specific Accessibility Audit:** Conduct a detailed audit of both sites to identify barriers to mobility and interaction for crew members with disabilities. Collaborate with cultural heritage managers and local authorities to address restrictions related to architectural conservation.
- **Virtual Access via 3D Modeling:** Use SCENE’s high-fidelity 3D models of each site to allow disabled crew members to remotely visualize scenes, reducing the need for extensive on-site presence. This tool will enable location scouting, scene planning, and crew training to be done virtually.
- **Audience Building and Community Outreach:** Engage local organizations for people with disabilities to review and advise on the accessibility features of each site. This engagement also strengthens relationships with the community, showcasing the inclusive approach of the SCENE project.

- **On-Site Adaptations and Equipment Modifications**

For the production phase, several on-site modifications and equipment adjustments will ensure accessible and safe working conditions for disabled crew members at Castel de Monti and the Basilica.

Accessible Pathways and Transportation:

- **De Monti Castle:** Install portable ramps and pathways where feasible to enable wheelchair access across the castle’s different levels and courtyards. In areas where permanent ramps are restricted due to conservation, temporary accessibility aids (such as portable lifts) will be installed.
- **Santa Caterina d’Alessandria Church:** Utilize SCENE’s 3D modeling to plan accessible navigation pathways that avoid delicate frescoed areas. Set up secure, stable pathways with anti-slip surfaces and accessible entry points.

5. Scenario’s definition

This section outlines the process of defining use case scenarios, a crucial step in tailoring the SCENE platform to meet the unique needs of diverse film production environments. Each use case scenario has been crafted based on thorough analyses of the specific goals, technical requirements, and practical challenges faced by professionals within various cultural and operational contexts. By closely aligning each scenario with real-world conditions, the project aims to ensure that the platform’s tools are both relevant and adaptable across different film industry settings. This approach allows for the development of practical solutions that streamline production processes, optimize resources, and address key industry challenges, ultimately demonstrating the value of SCENE in transforming modern filmmaking practices.

5.1 Application Scenarios for Pilot 1: Greece

The SCENE project’s Pilot 1 in Greece serves as a model for how cognitive AI technologies can be integrated into various aspects of film production. The following scenarios describe how these technologies are applied in real-world settings during the film production process, focusing on location scouting, post-production, and distribution.

5.1.1 Scenario 1: Efficient Location Scouting and Audience Engagement

In the first scenario, the Location Manager uses the Location Scouting Tool to explore and analyze the filming locations in Athens. This includes:

- Athens City Hall: Known for its neoclassical architecture, this location is ideal for establishing shots and interior scenes, providing a sense of grandeur.
- The National Garden: A vibrant, natural space that offers a peaceful, green setting for outdoor scenes.
- The First Cemetery of Athens: With its historical and somber atmosphere, it is perfect for emotionally intense scenes.
- Olympia Municipal Music Theatre "Maria Callas": An ornate venue suitable for performance-based scenes.

This scenario includes two distinct use cases: (a) the registration of locations’ information into the Location scouting tool by location managers, and (b) search for information within the location scouting tool and receive the optimum location based on the search criteria set.

(a) Register of locations’ information into the Location scouting tool by location managers

In this use case the location managers of the aforementioned monuments will register the information of the given locations within the Location scouting tool. Through the registration task they will be able to use and access the tool’s functionalities, and provide further feedback about the future extensions that this tool could have. A UML diagram presenting the registration case is depicted in Figure 2.

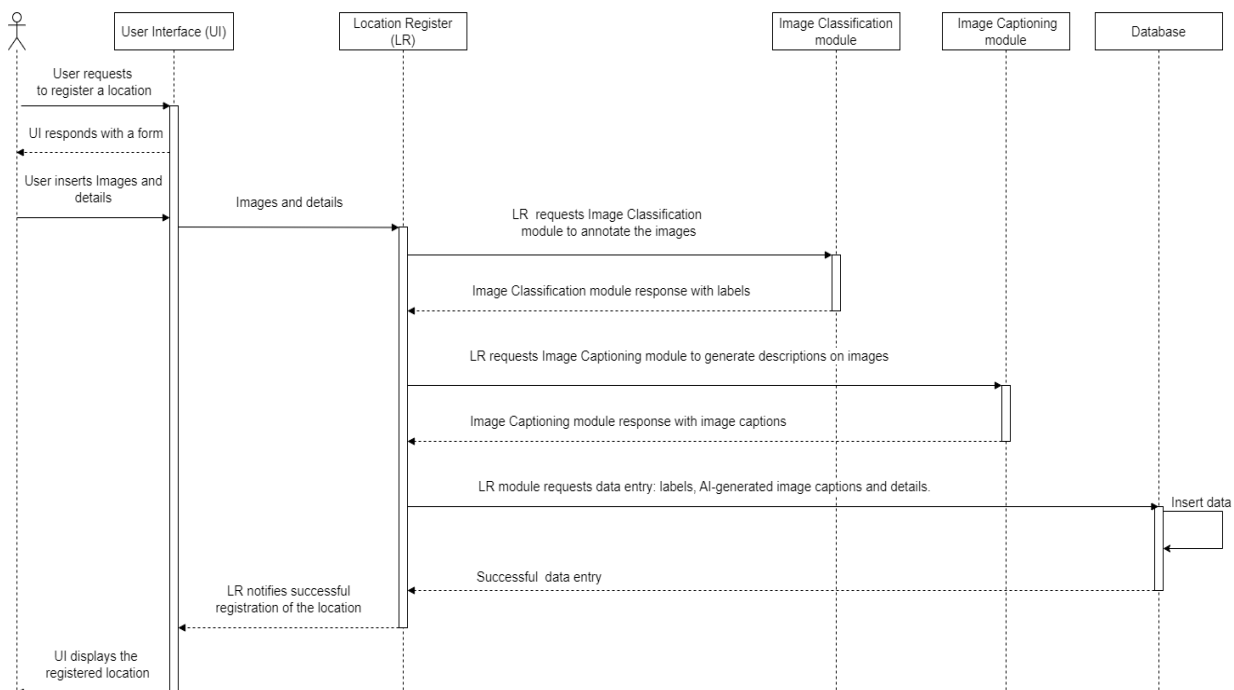


Figure 2: Location Scouting - location register sequence diagram

(b) Information retrieval for selected locations

The second use case presents the locations’ information retrieval via the Location scouting tool. The Location Scouting Tool enables the team to analyze lighting conditions, accessibility, and other logistical factors, streamlining the pre-production process. Alongside this, the Audience Building Tool is used to generate early interest by sharing teaser videos of these iconic locations, further integrating the audience into the pre-production phase.

More specifically, through the Location Scouting tool, the location scouters can check for the available locations based on its their requirements. The location scouters will be able to use the different filters available in the Location scouting tool and evaluate the search results. All the information of the Location scouting tool will be retrieved from the DataLake, as depicted in Figure 3.

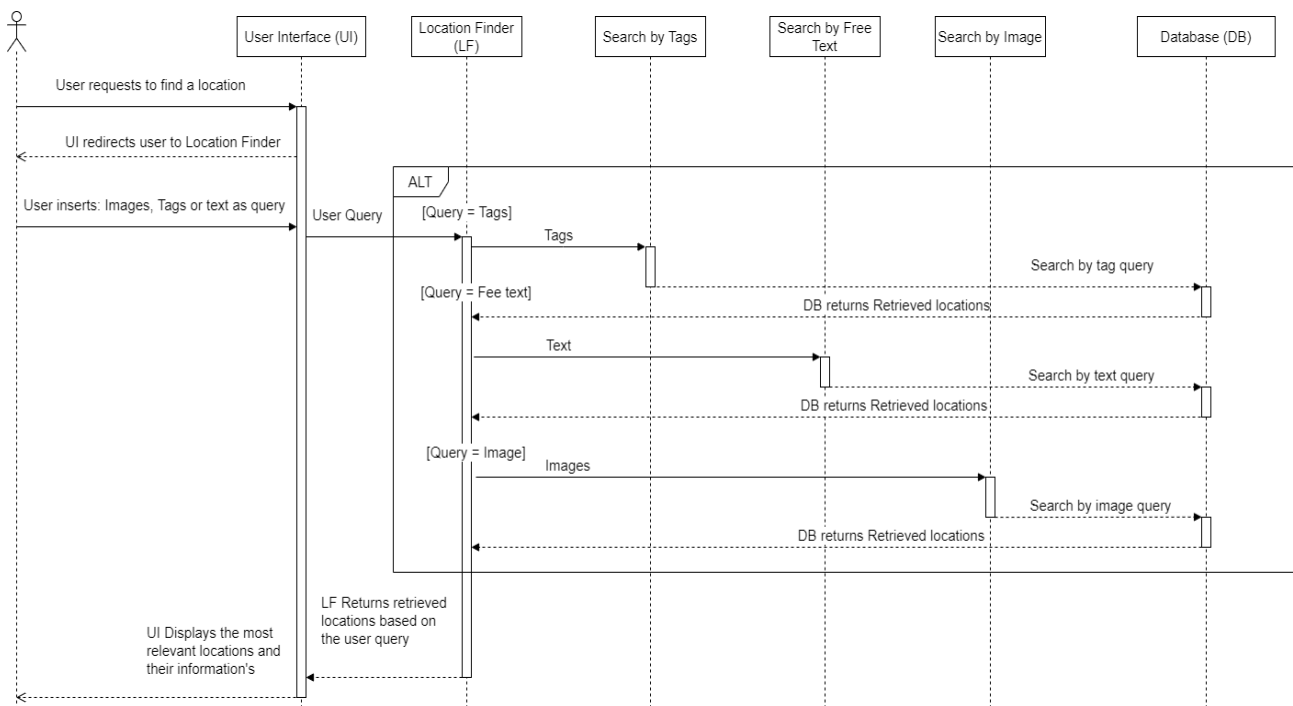


Figure 3: Location Scouting scenario for information retrieval

5.1.2 Scenario 2: Optimizing Post-Production Effects

After filming, the Director applies the post-production effects tool to fine-tune the mood and tone of each scene. For example:

- Olympia Municipal Music Theatre: Lighting adjustments make the theatre’s interior appear more dramatic, enhancing the emotional depth of the performances filmed here.
- The National Garden: Color grading and lighting tweaks are applied to make the sunlight filtering through the trees more vibrant, while still maintaining the natural beauty of the setting.
- Athens City Hall: The lighting is adjusted to highlight the intricate details of the building, emphasizing its architectural significance.

These enhancements are performed in collaboration with the Audio Engineer and Editor, ensuring that the final product meets the director’s artistic vision. Figure 4 depicts the functionality diagram of the Lightning Simulation module.



5.1.3 Scenario 3: Data-Driven Distribution and Impact Analysis

The final scenario focuses on the film’s distribution using the Distribution Engine. This tool helps the Distributors track viewer engagement across multiple platforms, including cinemas and streaming services. Key analytics such as geographic reach, demographics, and economic impact are visualized through dynamic dashboards.

The film’s release promotes Athens as a prime filming destination, with data indicating an uptick in international productions scouting locations in the city. The Producer collaborates with local stakeholders to ensure that the economic benefits are maximized, while also using the data insights to refine future distribution strategies.

5.1.4 Application of SCENE Technologies at Greek Pilot Site

According to the scenarios presented in the previous sections, the first pilot in Greece has drafted three scenarios that cover almost all phases of the filmmaking production process. Table 1 presents the tool that will be used and accessed in each phase.

Table 1: SCENE tools used by each scenario for pilot 1.

Phase	Scenario	Tools Used
Pre-Production	Location Scouting & Audience Engagement	- Location Scouting Tool - Audience Building Tool
Post-Production	Optimizing Post-production Effects	Post-production Effects Tool
Distribution	Data-Driven Distribution & Impact Analysis	Distribution Engine

5.2 Application Scenarios for Pilot 2: Cyprus

The SCENE project’s Pilot 2 in Cyprus serves as a model for how cognitive AI technologies can be integrated into various aspects of film production. The following scenarios describe how these technologies are applied in real-world settings during the film production process, focusing on location scouting, post-production, and distribution.

5.2.1 Scenario 1: Scout for a location based on the script provided

The scope of this scenario is the identification for the optimum location for shooting the short film prepared for Cyprus. As stated in D5.2, the short film will feature one or several of the following unique locations in Cyprus: Klirou Bridge, Foinikas Village, Panagia Asinou church, and the Panagia Tou Sinti Monastery. In order to find the optimum location, the location manager will use in the first use case (a) the Location scouting tool to search for the available locations in Cyprus and collect information about them, and in the second use case (b) to interact with chatbot available via the SCENE platform.

In the first use case, the stakeholders will be able to login to the Location scouting tool and search for available locations, as presented in Pilot 1 and Figure 2 and 3. After the search based on the above criteria, the location scouter will receive a list with the available locations, and the information about each one of them.

In the second use case, the stakeholders will be able to ask information about the available locations on the chatbot provided in the SCENE platform. The chatbot is able to answer in simple language, all the queries that the user poses in order to find any available locations in Cyprus and collect information on them. For

example, a user could ask "I want to find a location that seems like an abandoned village". In this use case, the chatbot functionality available via the SCENE platform will be evaluated, allowing the end user to ask a query in natural language, and collect the corresponding information. A diagram depicting the information retrieval of this use case is available in Figure 5.

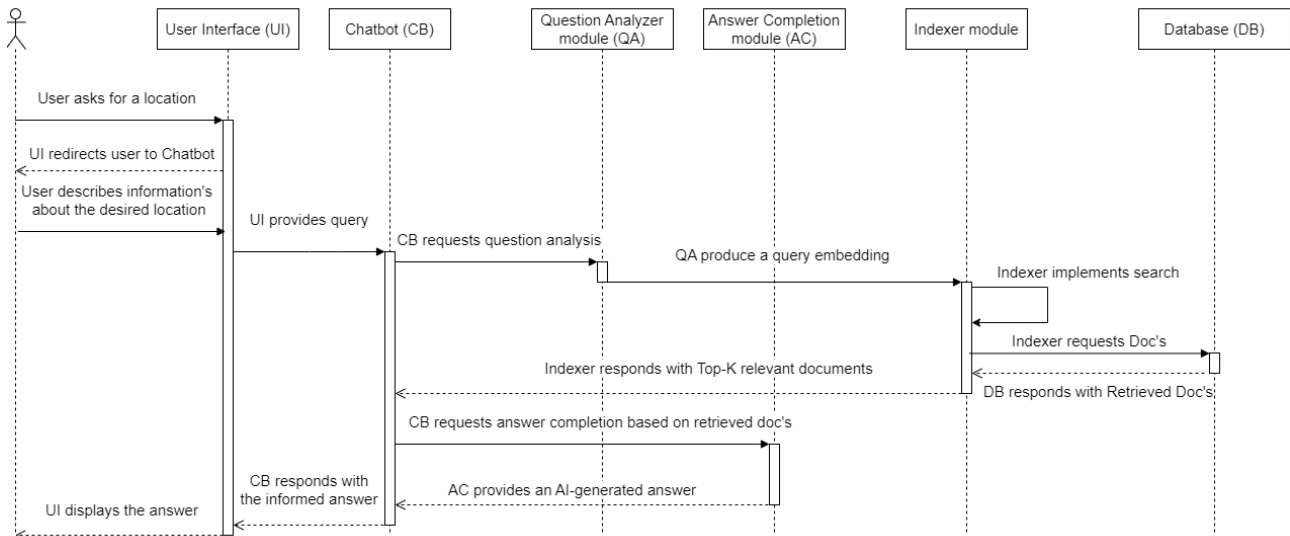


Figure 4: Location Scouting chatbot diagram

5.2.2 Scenario 2: Simulate lighting conditions on a specific monument

This scenario refers to the lighting simulations that will be used to simulate lighting conditions in the particular times in order to estimate the best time of the day for filming, to create the schedule as well as estimate the necessary lighting equipment needed.

5.2.3 Scenario 3: Audience building

The process begins with developing a short film script, accompanied by synopses and a pitch deck. At this stage, the project is registered on the SCENE platform, generating preliminary interest from potential viewers, supporters, and buyers, in collaboration with our partners at White Research. During this phase, the producer can also utilize the platform to network with co-producers, funding entities, and independent distributors, aiming to secure partnerships and financial backing.

With the final edit complete, the film is prepared for distribution on the SCENE platform. The Distribution Engine is instrumental in shaping the release strategy and providing valuable insights to inform future marketing initiatives. The Distribution Engine tracks the performance of the film’s trailer and supplementary content across social media and other platforms, gathering data on viewer demographics and engagement levels.

Furthermore, potential buyers and interested stakeholders can access the film’s teaser and synopsis, with the option to request a full viewing. Upon approval, a contract is automatically generated, using a smart contract to finalize the agreement between the producer and distributor, with predefined terms.

5.2.4 Scenario 4: Distribution and IPR

This scenario concerns the use and evaluation of the distribution engine of the SCENE platform. This scenario has two distinct use cases.

- (a) Use case 1: Uploading trailer to the platform and adding all information. Once the film is finalized, it is ready for distribution via the SCENE platform. The Distribution Engine (DE) plays an essential role in crafting the release strategy and generating insights to inform future outreach efforts. The DE



tracks the performance of the trailer and additional content on various platforms, gathering data on audience demographics and engagement.

Registered buyers and other stakeholders can view the teaser and synopsis, with the option to request a full viewing. If granted, an automated contract, facilitated by a smart contract, secures the licensing agreement with pre-specified terms.

(b) Use case 2: Issuing (or maybe filling out) smart contracts for agreed distribution.

A vital component of the Cyprus pilot is incorporating blockchain technology for the secure management of intellectual property rights (IPR). This system safeguards ownership of digital content and opens new monetization pathways, particularly for unique or exclusive production-related content. This mechanism also provides smaller productions with additional revenue opportunities, including the option to offer behind-the-scenes content as Non-Fungible Tokens (NFTs), such as photos and clips from filming locations.

5.2.5 Application of SCENE Technologies at the Cyprus Pilot Site

According to the scenarios presented in the previous sections, the second pilot in Cyprus has drafted four scenarios that cover almost all phases of the filmmaking production process. Table 2 presents the tool that will be used and accessed in each phase.

Table 2: SCENE tools used by each scenario for pilot 1.

Phase	Scenario	Tools Used
Pre-Production	Scout for a location based on the script provided	Location scouting tool & chatbot
Pre-Production	Simulate lighting conditions on a specific monument	Lighting simulation module
Post-Production	Audience building	Audience Building tool
Distribution	Distribution & IPR	Distribution Engine

5.3 Application Scenarios for Pilot 3: Italy

The SCENE project's Pilot 3 in Italy serves as a model for how cognitive AI technologies can be integrated into various aspects of film production. The following scenarios describe how these technologies are applied in real-world settings during the film production process, focusing on location scouting, post-production, and distribution.

5.3.1 Scenario 1: Location Scouting and Audience Engagement

In the pre-production phase, the **Location Manager** utilizes SCENE's Location Scouting Tool to explore and digitally assess each filming location, starting with detailed 3D models:

- **De Monti Castle**: Known for its defensive structure and ornate facade, the castle presents an ideal setting for historical dramas and fantasy films.
- **Santa Caterina d'Alessandria Church**: Renowned for its elaborate frescoes and Gothic architecture, the Basilica suits productions focusing on religious or historical themes.

The **Location Scouting Tool** provides essential insights, including lighting conditions, spatial dimensions, and ease of access, helping the team efficiently plan and visualize each scene. **Audio and lighting simulations** allow the production team to experiment with acoustics and lighting, ensuring each location's unique ambiance is effectively captured in the final output.



Meanwhile, the **Producer manages** logistical considerations, coordinating budgets and timelines. The **Audience Building Tool** supports early engagement by creating location-based teaser content to showcase each site's aesthetic. This content, shared on social media and with municipal partners, sparks audience interest in the sites, building anticipation before production begins.

5.3.2 Scenario 2: Scene Tracking and Visual Precision

During production, **Ultra-Wideband (UWB)** tracking technology is deployed to manage the precise positioning of actors and props within each location, facilitating scene continuity and accurate visual effects. This is particularly useful for scenes requiring complex choreography or interaction with specific elements, such as actors moving through the ornate interiors of the Basilica or navigating the corridors of Castel de Monti.

This phase also leverages SCENE's tools for real-time **audio and lighting adjustments**, ensuring that each scene reflects the intended mood and aligns with the historic setting's aesthetic.

5.3.3 Scenario 3: Enhanced Visual and Audio Effects

The post-production phase uses SCENE's **Post-Production Effects Tools** to enrich the visual and auditory elements of each scene:

- **Santa Caterina d'Alessandria Church:** Light and color enhancements emphasize the frescoes' intricate details, creating a reverent atmosphere. Audio effects, such as subtle echoing, are applied to simulate the Basilica's acoustics.
- **De Monti Castle:** Dramatic lighting techniques are used to accentuate the castle's architectural features, enhancing its medieval ambiance. Atmospheric sounds, like soft wind or distant echoes, help create a more immersive experience.

The **Editor** collaborates closely with the Director to align these visual enhancements with the film's tone and pacing, while the **Director of Photography (DP)** ensures visual consistency between original and edited footage.

To protect intellectual property and manage exclusive content, **Blockchain technology** secures assets like 3D models and unique behind-the-scenes footage as NFTs. The **Media Asset Manager** organizes these digital assets, ensuring they are accessible across the production pipeline.

5.3.4 Scenario 4: Reaching a Global Audience

In the distribution phase, SCENE's **Distribution Engine** manages the film's release across streaming platforms, cinemas, and social media, both locally and internationally. The **Recommendation System** uses audience data to suggest the most effective distribution channels, targeting viewers who are most likely to appreciate the cultural and historical depth of the Italian settings.

This phase emphasizes the unique cultural narrative of the Castel de Monti and the Basilica, positioning these sites as distinctive, high-value locations for international film production. The **Distribution Engine** gathers viewer engagement metrics, such as demographic data, to evaluate the film's impact and refine future strategies.

Key outcomes of this phase include elevating Italy's status as a filming destination, increasing tourism interest in these historic sites, and boosting local economic activity through global exposure.



5.3.5 Application of SCENE Technologies at Italian Pilot Sites

Each SCENE tool and technology will be adapted to the specific environments of the Italian pilot sites, ensuring that the film production process aligns with the heritage and logistical needs of each location.

De Monti Castle

- **Pre-Production:** Location Scouting Tool and 3D modeling of the castle's exterior and battlements provide filmmakers with precise visualizations. Light simulations test day and night scenes, adjusting for natural light variations. Audio simulations are also employed to mimic ambient sounds, such as distant winds.
- **Production:** UWB tracking enables detailed tracking of actors in multi-level scenes within the castle's corridors and towers, optimizing coordination for action sequences.
- **Post-Production:** Visual effects, such as moody lighting and color grading, are applied to emphasize the castle's medieval character. Blockchain-based IP protection safeguards assets like unique 3D model renderings and exclusive behind-the-scenes NFTs.
- **Distribution:** The Recommendation System targets audiences interested in historical dramas, with distribution on specific streaming platforms that reach enthusiasts of European medieval heritage.

Santa Caterina d'Alessandria Church

- **Pre-Production:** The 3D modeling tool captures the Basilica's frescoes and architectural details, allowing directors to pre-visualize scenes. Lighting simulations ensure the correct use of natural and low-lighting settings to preserve the site's atmosphere. Audience Building Tool generates interest through curated images of frescoes.
- **Production:** Due to the delicate environment, filming is enhanced by UWB tracking for precise positioning, avoiding direct contact with frescoed walls.
- **Post-Production:** High-resolution color grading and sound effects recreate the reverberating acoustics of the Basilica. Blockchain-based asset management ensures secure storage of unique shots and content from the site, including interactive virtual tours as NFTs.
- **Distribution:** The Distribution Engine recommends suitable channels for reaching cultural and religious audiences, leveraging Basilica's historical and artistic appeal.

Each production phase in the Italian pilot is paired with specific metrics and validation points to ensure that SCENE's objectives are met:

- **Pre-Production Metrics:**
 - **Validation of Digital Models:** Use survey feedback to assess model fidelity and utility in pre-visualization.
 - **Stakeholder Satisfaction:** Measure satisfaction levels of cultural heritage managers regarding reduced physical interaction with the sites.
- **Production Metrics:**
 - **Tracking Precision:** Monitor the efficacy of UWB tracking for scene accuracy and continuity.
 - **Time Savings:** Track reduction in set-up times and validate with production team feedback on workflow efficiency.
- **Post-Production Metrics:**
 - **Audience Engagement:** Analyse distribution analytics to measure reach and engagement on content based on Castel de Monti and the Basilica.
 - **Cultural Impact:** Assess audience appreciation and awareness via post-viewing surveys focused on cultural heritage representation.





By integrating these tools across the Italian pilot sites, SCENE aims to streamline the production process, engage audiences, and celebrate Italy's rich heritage. These metrics, combined with stakeholder and audience feedback, will ensure that the Italian pilot achieves its objectives of promoting Castel de Monti and the Basilica di Santa Caterina as global cultural landmarks for the film industry.

6. Conclusion

The deliverable D2.1 of the SCENE project serves as a foundational document for the development of the SCENE platform, a comprehensive tool designed to support the European filmmaking industry. It focuses on identifying the needs of stakeholders involved in filmmaking, including production companies, location managers, and artistic directors. Through participatory design processes, which involve direct input from industry professionals, the project team has defined key use cases and application scenarios that will shape the platform's functionalities. The document emphasizes the importance of understanding real-world requirements to ensure that the platform effectively supports the various stages of filmmaking—pre-production, production, and post-production—by addressing challenges such as location scouting, audience building, content distribution, and intellectual property rights management.

The detailed analysis provided in this deliverable D2.1 includes operational scenarios, optimization criteria, and technical constraints that ensure the platform will be user-friendly, accessible, and aligned with the needs of filmmakers, distributors, and investors. The participatory approach, which incorporates stakeholder interviews and focus groups, guarantees that the tools developed meet the practical needs of the filmmaking community. The deliverable's outcome—a set of well-defined use cases—lays the groundwork for the SCENE platform's pilot phase, where its functionality will be tested and validated. This process ensures that the platform can effectively address current industry challenges and provide a valuable resource for the European filmmaking ecosystem. This deliverable will be used as baseline for the work carried out in WP5 and the set and implementation of the pilots.



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