

# D5.7 Model for the future

WP 5 Physical and Virtual infrastructure

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film\_eu

European Universities Alliance  
for Film and Media Arts

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## Introduction

FilmEU aims to be a space for creativity, cultural diversity, and global impact both physically and virtually. As the Alliance continues to evolve the implementation of advanced audio-visual production software solutions, such as Limecraft, the FilmEU Portal will become increasingly important for optimizing governance, enhancing educational opportunities, and promoting collaboration within the alliance. These industry leading solutions have migrated from past hardware solutions to cloud based alternatives, allowing for greater collaborative opportunities, which FilmEU has harnessed across all partners. This concise report offers an overview of these two innovative platforms; Limecraft and the FilmEU Portal. This report gives an overview of their roles in governance and educational implementation, as well as providing future recommendations for maximizing their potential.

This report focuses on the core functionalities of Limecraft cloud based production platform and the FilmEU Portal, highlighting their contributions to FilmEU pilots so far. We examine the ways in which these tools have been successfully integrated into governance and educational practices, showcasing case studies and demonstrating examples of best practices.

This report also offers forward-looking recommendations for the future development and deployment of Limecraft software and the FilmEU Portal. These insights are based on our analysis of both the software, pedagogical implementation and future vision of FilmEU. By providing a comprehensive yet succinct overview, this report aims to inform and inspire FilmEU participants to leverage these tools for improved governance, education, and collaboration within the Alliance.

## Rational

WP 5 designed, piloted and implemented both a digital and physical infrastructure to manage, support and facilitate learning and research across all the campuses of the alliance. This constitutes our shared campus – a cultural and creative hub. New pedagogical practices have developed through these investments and will allow FilmEU lead the development of Film and Media arts education.

This infrastructure is a key differentiating aspect of the European University since it materialises it's positioning in the multidisciplinary field of artistic creation and experimentation, while reinforcing its international and cooperative dimensions. This is also a key driving element of the proposed Samsara model, since project

development and associated mobility are dependent on the facilities and resources offered by this network of labs. We have named this network FilmEU HUB.

FilmEU HUB is composed of three interlinked layers of shared physical and virtual infrastructures:

1. A virtual repository and media management layer that will provide the Alliance with storage and media assets and metadata management services;
2. A VLE that will integrate three different components: a dedicated platform for LLL and internal training entitled Lusofona X based on the Edx framework and APIs; a dedicated implementation of Moodle supported by the existing implementations in the partner HEIs; and a number of virtual rooms for education and collaboration;
3. Four distinctive labs in each of the campuses of the Alliance corresponding not to mere amalgamations of technology but to a collection of equipment, resources and facilities consistent with the future areas of innovation for the culture and creative industries recently identified in the EU report “100 radical innovations for the future”.

The objective of the FilmEU Hub is to allow students to move between centres and work independently and/or concurrently in each centre, seamlessly and without having to move their assets with them. FILMEU HUB is a collaborative and decentralized media ingest and transcoding framework. The enabling of collaborative-based media-production workflows in a distributed cloud environment is a priority when we need to strengthen the ties between media production centres, provided by European Audio-visual Oriented Universities.

In order to do that, it was necessary to develop a decentralized ingest ecosystem, with a centralized view, in which each student or teacher can work on the media assets, independently and seamlessly, wherever they are. The ingest framework will be format agnostic, able to work with all major media coding and wrapping formats in order to guarantee the interoperability of the architectural components. In a system like this, it is necessary for the user to have a remote preview of the content that is being worked on.

The future of screen arts is defined by new technologies. The FilmEU hub reflects the advances that have been made in file sharing and media management technologies that will allow collaborators to work together no matter where they are. It decentralises resources so that students and staff can avail of the available facilities or labs of each of the partners. It will also facilitate mobilities as project work can be accessed anywhere.

FilmEU sought proposals for the design, build and installation of an online web based common portal of existing services, plus several services being provided by FilmEU only, that will work across a number of locations in-country and in between several EU countries. Maintaining a good, streamlined UX experience was essential to the success of this project. This front facing FilmEU portal is the gateway to access the combined resources of the FilmEU members. It is scalable and will seamlessly integrate new member institutes, as the consortium expands. Allowing for shared resources, the portal is a key step in bringing a unified user experience, be they staff or students.

## Governance

The FilmEU Alliance is constantly evolving, and embracing innovative software solutions like Limecraft and the FilmEU Portal is key to improving governance, education, and collaboration. This report provides a simplified overview of these platforms, exploring their roles in centralizing knowledge and enhancing project management across the industry. We also delve into their use in governance and educational implementation, as well as offer future recommendations.

### **Centralization of Knowledge and Rapid Retrieval Time:**

Limecraft and the FilmEU Portal serve as essential tools for storing and managing all project-related information, ensuring efficient knowledge centralization and fast data retrieval. As English is the common language across the Alliance, all communications and documents are stored in English to promote accessibility and understanding.

### **Project Management Office (PMO) and Steering Committee (SC):**

The PMO maintains the project management platform, while the SC oversees decision-making and action items. Both entities are established under WP1 during the first year of FilmEU+, with a standard operating procedure agreed upon for smooth operation.

By offering a clear and concise overview of Limecraft and the FilmEU Portal, this report aims to demonstrate their value in enhancing knowledge sharing and project management within the Alliance.

## FilmEU Cloud

Going forward, software solutions including Limecraft and FilmEU Portal will be integrated into the 'FilmEU Cloud' working infrastructure that will cover digital and virtual side of FilmEU.

In the upcoming phase of FilmEU+, a comprehensive data policy (GDPR) and implementation plan will be developed to harmonize governance, operational, structural, and educational components within the European film industry. This strategic approach

aims to ensure that all stakeholders adhere to a consistent framework, fostering seamless collaboration, and promoting best practices across the Alliance. By aligning these diverse elements under a cohesive data policy, the Alliance will benefit from increased transparency, improved decision-making, and a more unified approach to tackling challenges and opportunities in the ever-evolving film and data landscape. The implementation plan will provide clear guidelines and actionable steps for stakeholders to follow, paving the way for a more integrated and efficient digital and virtual approach.

## Education

Limecraft and FilmEU Portal has proven to be instrumental in facilitating collaborative filmmaking projects between alliance partners at both undergraduate and postgraduate levels. These cutting-edge tools not only streamline the processes of teaching and evaluation but also play a vital role in FilmEU's pedagogical approach. By fostering seamless communication, simplifying project management, and enhancing the overall learning experience, Limecraft and FilmEU Portal are revolutionizing the way students and professionals collaborate, paving the way for a more connected and dynamic European film industry.

Below is a brief overview of both the FilmEU portal and Limecraft. After this a short case study of using Limecraft in “real world settings” will be outlined.

## FilmEU Portal

The FilmEU Portal is an online web based common portal of existing services being provided by FilmEU and FilmEU institutions. It is a one-site online platform that works as a storefront for these resources, connecting FilmEU staff and students to the tools and services they require.



## Quick guide to FilmEU Portal

The FilmEU Portal brings all the resources available across FilmEU partners to one website, making them easier for you find and access.

Portal Homepage: <https://portal.film.eu/>

The screenshot shows the FilmEU Portal homepage. Annotations point to the following elements:


- Enter portal.film.eu into your browser:** Points to the address bar showing `portal.film.eu.eu`.
- Quick search box:** Points to the search input field with the placeholder text "Add keywords and press Enter".
- Links to FilmEU website a socials:** Points to the top right navigation bar containing "Login", "FilmEU Website", and social media icons for Facebook, Instagram, Twitter, LinkedIn, and YouTube.
- Choose your preferred language:** Points to the "Select Lang" dropdown menu, which is currently set to "Estonian". Other options include Dutch, French, and Portuguese.

The main content area features the headline "Europe is our campus" and a description: "FilmEU brings together four European Higher Education Institutions. This portal has been created to better collaborate and share resources across each partner institution." Below this is a section titled "Find Resources by Category" with a row of eight circular icons representing different resource categories.

### Find Resources by Category

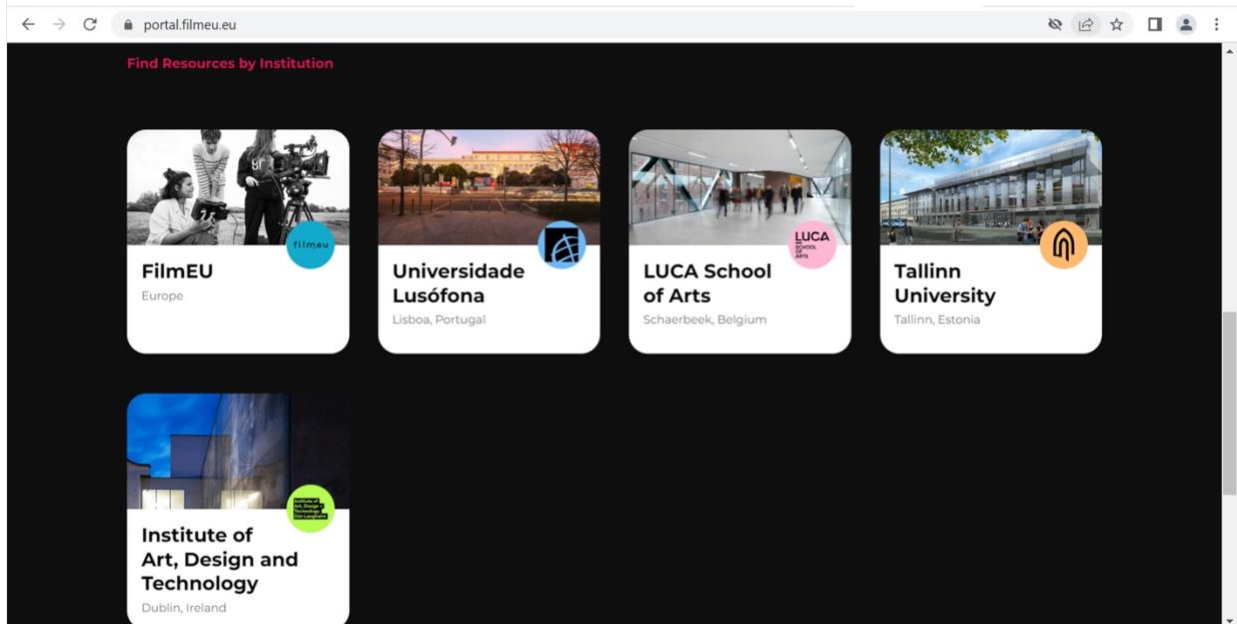


Scroll down and you can find resources by category.  
Hover your cursor over each graphic to show the category title.

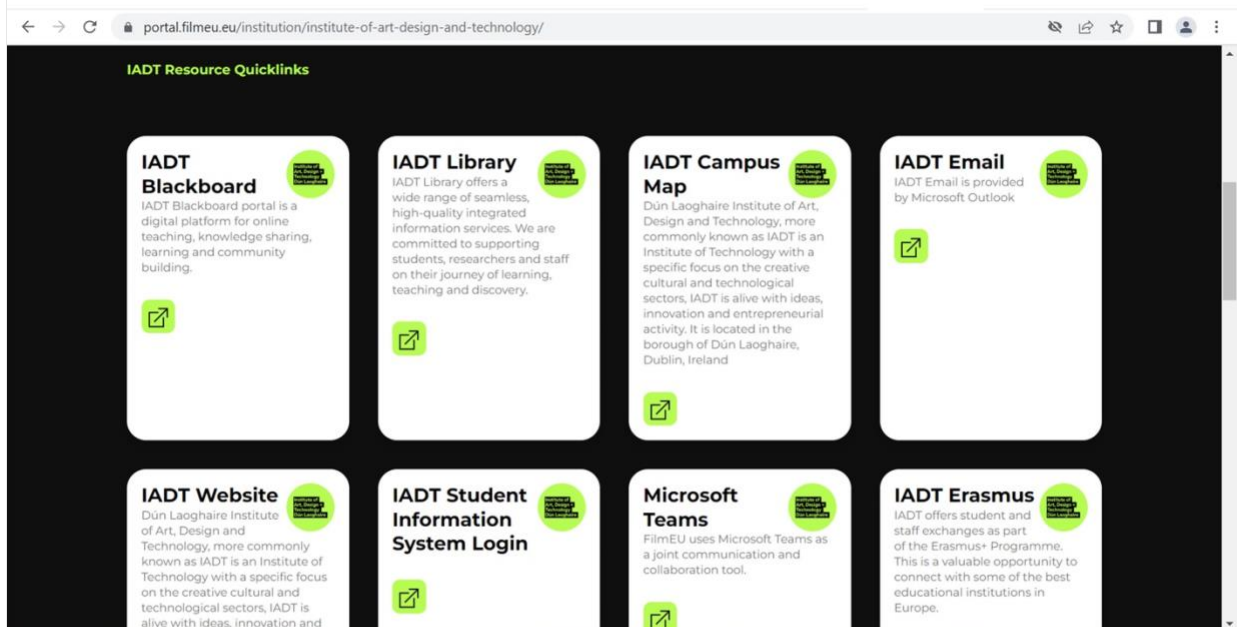
Example: Click the book graphic to access the library resources in all institutions. Click the  symbol to launch the resource

The screenshot shows the "All Library Resources" section. It features four library cards, each with a logo, name, description, and an external link icon (a square with a diagonal line).


- LU Library:** Victor de Sá Library was inaugurated in 1994 honouring the name of the first General Librarian of Lusófona University. Today, the Library has a significant collection of 78000 documents on paper and access to many scientific databases, constantly updating and contemplating the various areas of knowledge, organized thematically.
- LUCA Library:** The library of LUCA School of Arts is a scientific library, the collection of which specializes in visual arts and design, audiovisual arts, music, drama, product and interior design and construction technology. Within her field our library probably has the richest collection in the country.
- TU Library:** The Tallinn University Academic Library includes the Research Library and the Study Centre. With its more than 2.6 million information entities and extensive electronic resources, the Academic Library supports the acquisition of high-quality education.
- IADT Library:** IADT Library offers a wide range of seamless, high-quality integrated information services. We are committed to supporting students, researchers and staff on their journey of learning, teaching and discovery.



Scroll down further on the homepage and you can find resources by institution.



Select an institution and browse the available resources.

Open the resources by clicking the  symbol

The FilmEU Portal is now fully operational, following a successful pilot phase where all partner institutions had the opportunity to test the site and provide feedback. This valuable input has informed the final implementation of the portal, ensuring it meets the diverse needs of our Alliance. Going forward, the FilmEU Portal will serve as a critical link facilitating communication and collaboration among all institutions involved. The next section of this report will delve into the further implementation of Limecraft, expanding on its initial piloting as discussed in deliverable D5.6. As we continue to integrate these digital tools into our workflows, we are confident they will significantly enhance our collective ability to deliver on the objectives of the FilmEU Alliance.

<https://portal.filmeu.eu/>

## Limecraft

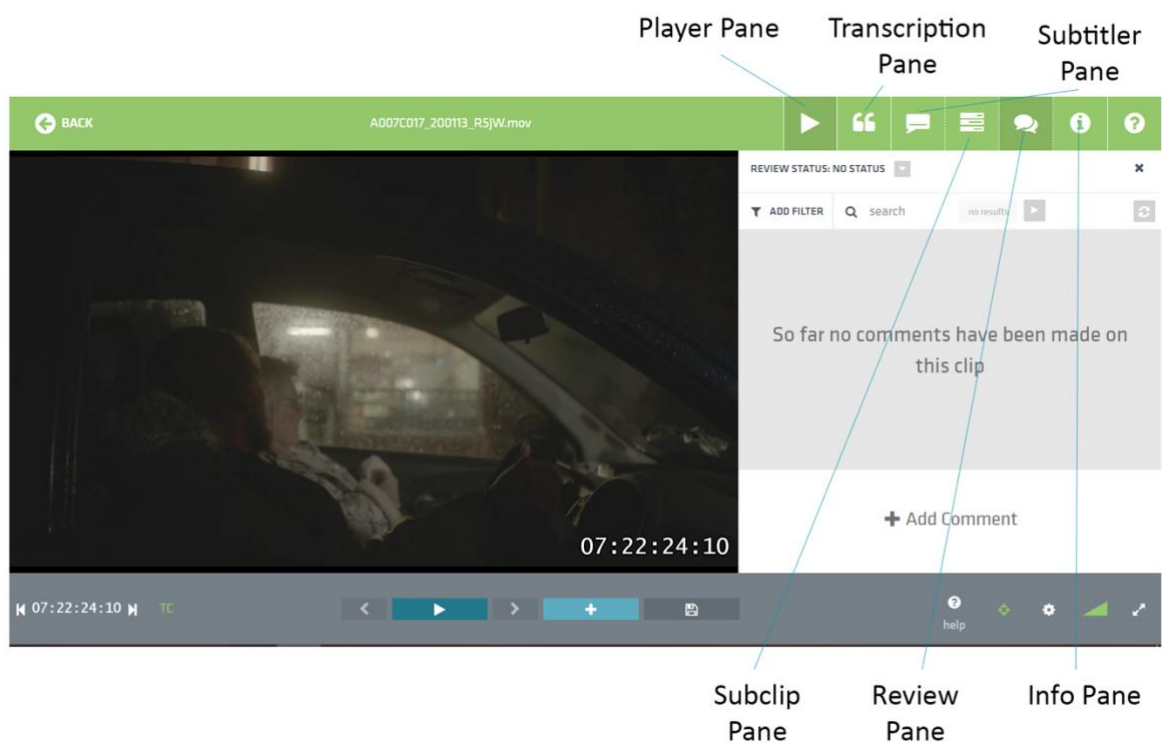
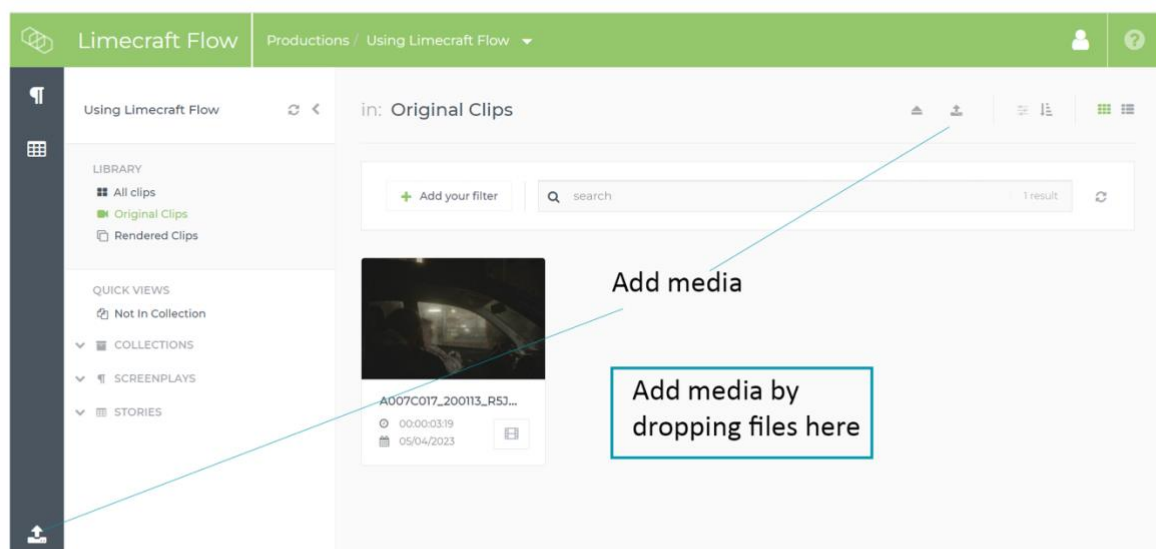
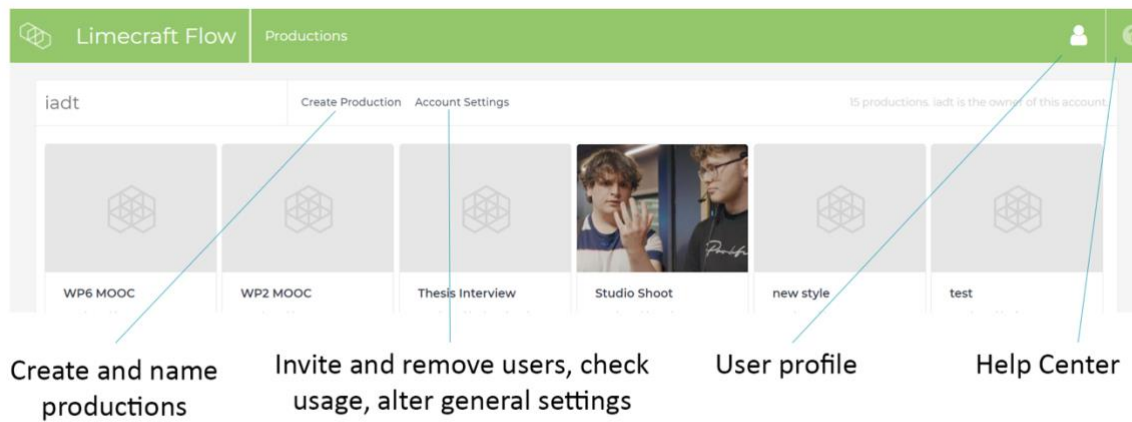
The main aim of the FilmEU Hub is to enable students to move between centres and work independently and/or concurrently in each centre, seamlessly and without having to move their assets with them. Limecraft was selected by FilmEU as a cloud-based **Media Asset Management (MAM)** Platform to allow this collaboration online in production as well as in distribution. Limecraft is a Media Asset Management (MAM) service in the cloud. It has two components, **Limecraft Flow** and **Limecraft Edge**.

**Limecraft Flow** is an online browser-based platform. It is used in managing assets, and in workflows like ingesting rushes, editing, subtitling, transcription, etc.

**Limecraft Edge** is a native application. It is responsible for encoding proxies and sending those to the cloud, referred to as 'ingest'. It allows you to use proxies instead of the high-res footage for logging and storyboarding.

Edge and Flow have different purposes. Both Edge and Flow can be used in playing and transcoding media files, but they have different functions. Edge is used by one person at a time, while Flow allows several people to collaborate on projects. Flow gives access to entire catalogues of projects and assets. Edge only operates on files that are locally available. Edge does not have built-in AI services, so it is not capable of transcribing content or creating subtitles. Flow has access to a wide range of AI services. When adding media using Flow, it will use the video and the first two audio tracks to make a proxy. Edge offers more flexibility in deciding how the proxies are structured.





The following manual was created and shared with students for reference when using Limecraft in their productions:



**Limecraft is the online platform that all FilmEU institutions work with. As a result, we have a linked cloud-based but secure video platform for all our media management.**

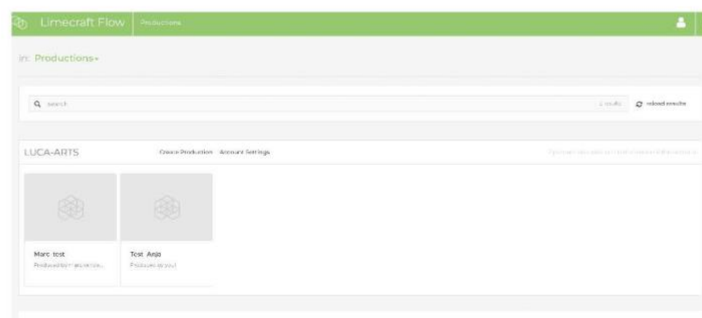
## 1. Limecraft Flow

Limecraft Flow is the online platform that all FilmEU members can access. For this you need an internet browser (Google Chrome, Explore, Safari, ...) together with your **username** and **password**. You can create this via the invitation you get from the responsible post-production of your campus.

As soon as the editing assistant has loaded material through Limecraft Edge, everything can be viewed here. A powerful search engine helps you efficiently search for the right fragments. You can safely download or share media. All types of files are storable and interchangeable. (transcodes, proxies, AAF, ...) All integrable in Adobe Premiere, Avid MediaComposer and more. An automated transcription and captioning tool is also available.

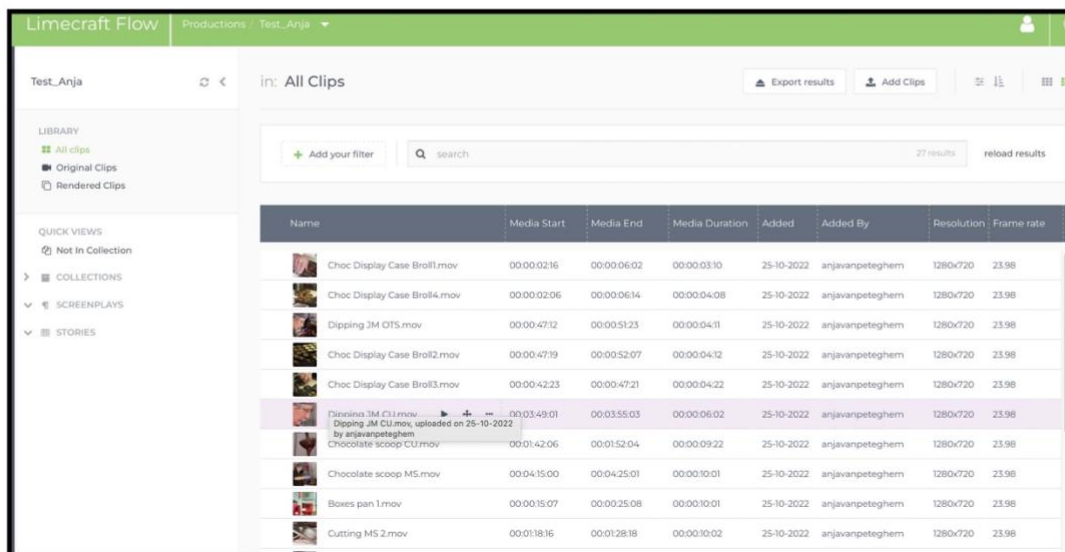
<https://platform.limecraft.com/>

Once logged in you enter the Limecraft Flow workspace:



- 1, As a student you can be a member of different accounts. In the example above, only the Luca-arts account can be seen. Other accounts will be BFT, Lusofona and IADT.
2. Productions can be created per account and can therefore be viewed by all members.
3. Don't forget the "reload results" button at the top right when you do a search.

Click on the production in which you want to work.  
On the left you have an overview of all available files via the library. To quickly find specific files, use the "Add Your Filter" function. Many filters via metadata are possible. As long as they were imported through Edge



Select a file and you will get several options at the top right:



### **Play/stop**

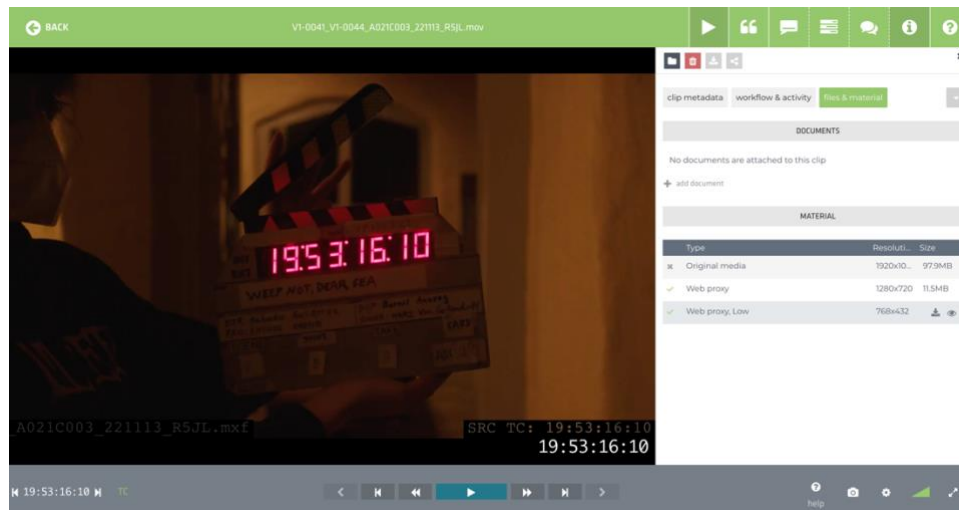
**Transcription panel:** Here you can quickly get an interview transcribed with different choices in terms of language. Please note: Dutch for example is still difficult and contains many spelling errors. You should also check in English. Errors can be corrected via the Edit button. You can also name the different speakers. Flow should recognize the different voices. By activating the clock you can adjust the timing of the titles if this is no longer synchronous.

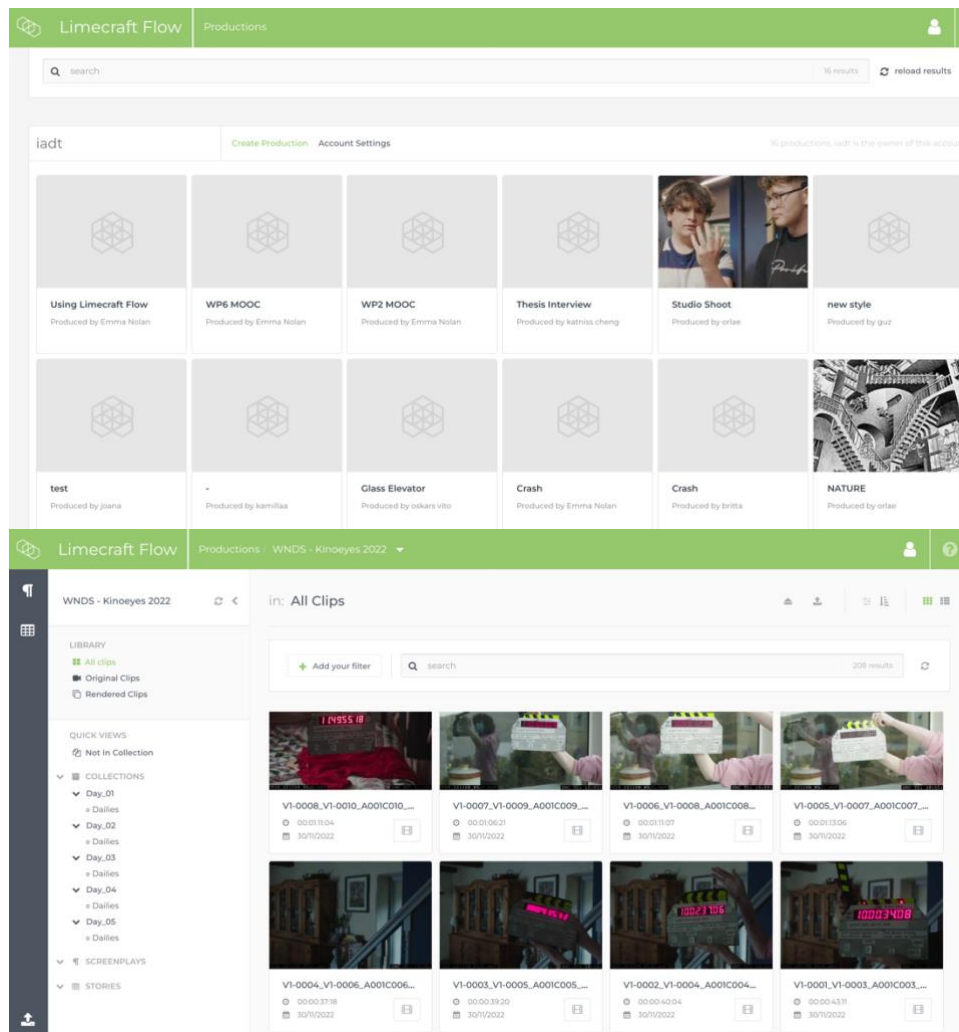
**Subtitle panel:** This allows you to create subtitles based on an existing text file or start from scratch. Check the spelling. Don't forget to mark your captions as "complete" once you're done. That way you can quickly find the right file via the library based on text where something specific is told. You can also export the text afterwards.

**Review panel:** Here you pass comments to each other, timecode based.

## Real World Implementation

Throughout 2022 and 2023 Erasmus+ MA Kino Eyes, students embarked on a pilot project that leveraged the capabilities of Limecraft software to enhance their filmmaking and academic pursuits. The software was utilized in two distinct ways during this period. Firstly, it enabled international collaboration by allowing students to share film rushes between a director based in Ireland and an editor working in Hungary, thus overcoming geographical barriers and promoting seamless teamwork. Secondly, the students employed Limecraft's transcription software for their individual theses, significantly streamlining the process of documentation and analysis. The success of this pilot project highlights the potential of Limecraft and similar software solutions to transform the landscape of film education and collaboration, paving the way for more interconnected and efficient creative processes.





## Experience of using Limecraft in the Erasmus+ MA Kino Eyes

A pilot project was undertaken during the production of a graduation film in Ireland under the Erasmus+ MA Kino Eyes program. The unique challenge faced by the students was that the director and editor were located in different countries while working on the film. They needed to efficiently collaborate on large digital files generated by professional camera and sound equipment. Limecraft played a pivotal role in facilitating this process, enabling seamless collaboration and exchange of data between the director and editor, regardless of their geographical locations. In the following sections, we will explore the experiences of both the editor and director, highlighting the advantages and effectiveness of utilizing Limecraft in their filmmaking process.

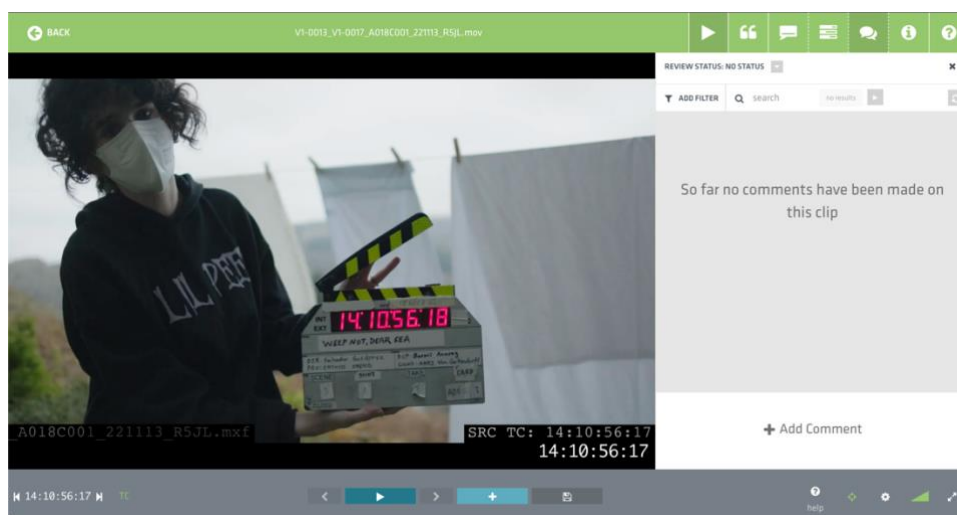


## Experience of Director Salvador Alejandro Gutierrez Perez

*During the postproduction of our latest short film, the editor was based in Budapest while the rest of the team was in Dublin, where production took place. Limecraft proved to be an excellent tool for remote collaboration.*

*With its simple and intuitive interface, the platform allowed me, as director and the editor, to work on the project simultaneously, regardless of location. In addition, through Limecraft, we could review the material and do some preselection, so by the time we were reunited, we had already laid the foundations for editing our film.*

*Limecraft is an excellent solution for anyone looking to streamline their remote editing workflow.*



## Experience of Editor Zsafia Eszter Ordog

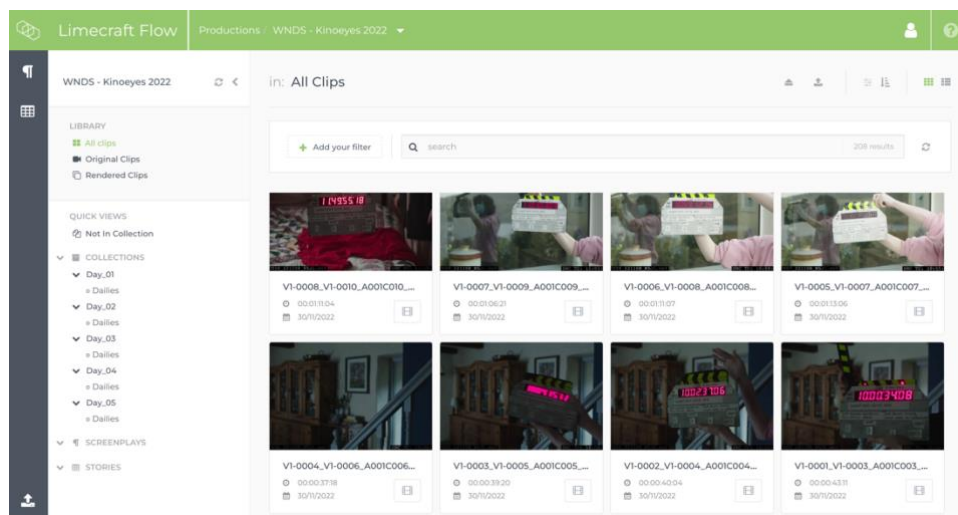
*"We used Limecraft as a platform for online sharing the dailies of a short film between the director and editor residing in different countries.*

*The transcoded raw footage was uploaded to Limecraft, and the director was able to watch, select, and comment according to filename and timecode before the editing process started physically in person.*

*Limecraft has a function for transcoding and downgrading the original footage to editable proxies, but we haven't used that function. That means, that we could use the uploaded videos not only for viewing, but to download and work and edit the files, even multiple editors can access and download them from anywhere, and everyone would have the same files – like a cloud storage.*

*It seems to be a good platform for sharing not only raw footage but different versions of edited sequences, sharing between different crew members (producers) for reviewing and commenting.*

*We continued the editing in person, but if we would stay apart in different countries, we might have used it more for file sharing and reviewing different cuts, Limecraft has many applicable features for collaboration."*

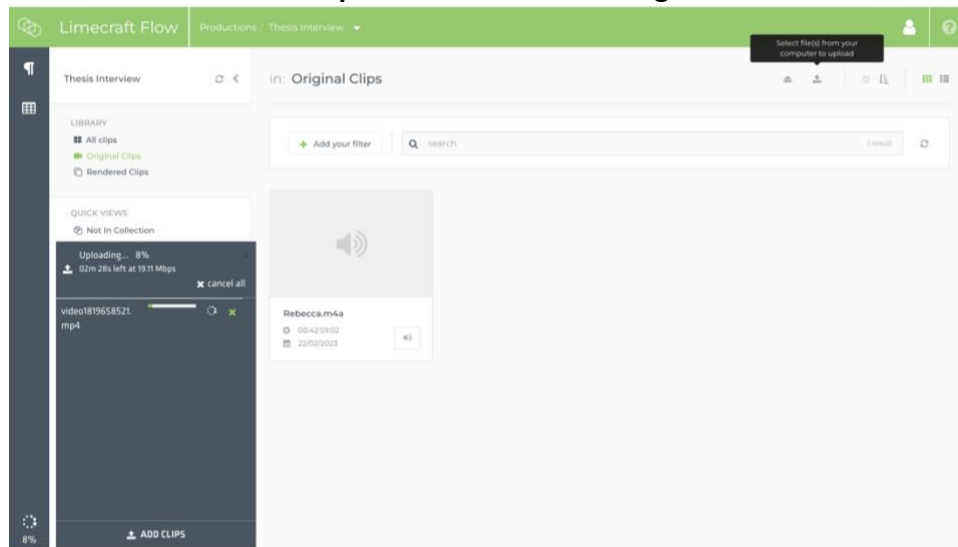


## Experience using Limecraft as a transcription tool

Students from the Erasmus+ MA Kino Eyes program conducted interviews as part of their primary research for their respective theses. To efficiently transcribe these interviews into text, they utilized Limecraft's transcription tool, which streamlined the process and allowed them to focus on the analysis of the content. In the following section, they one student will

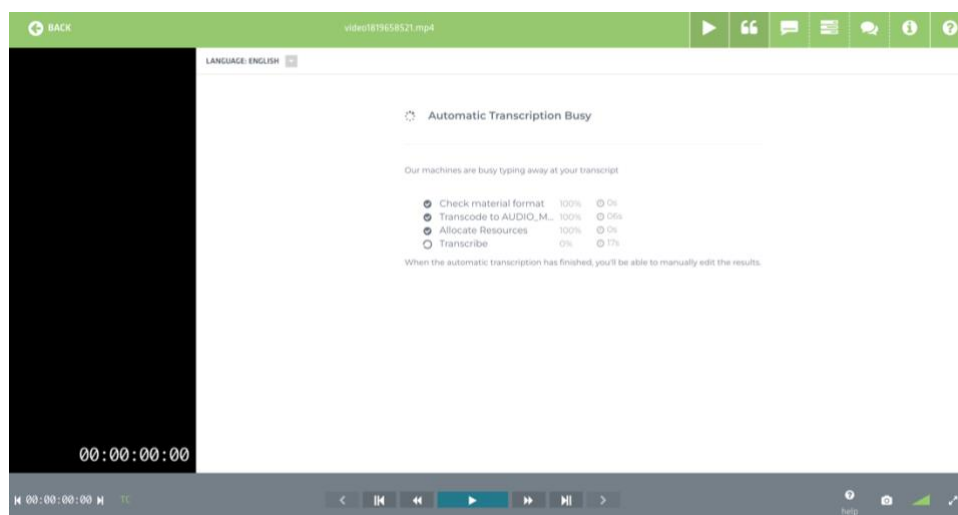
share their experiences using Limecraft for transcription, showcasing the benefits and effectiveness of this innovative tool in their academic pursuits.

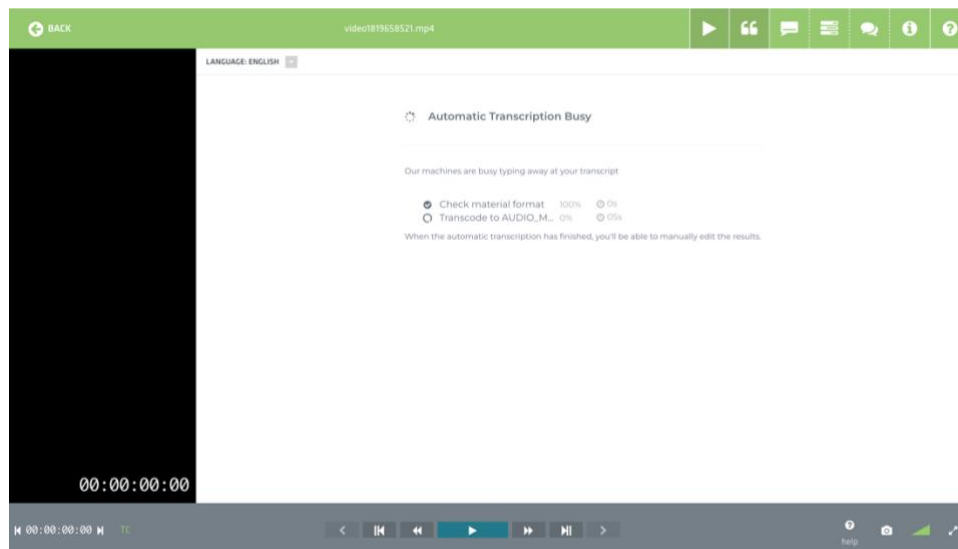
### Experience of Kaniss Cheng



*"I used Limecraft to generate the transcript for two interviews that I conducted for my thesis. The platform is very straightforward, I only need to upload the audio/video file then it will generate automatically. The generation of the transcript takes around 15-30 minutes depends on the duration of the files.*

*For the first interview (audio file), the accuracy of the transcript is around 85% which means I still have to go through and fix some parts. For the second interview (video file from Zoom call), the accuracy of the transcript is around 90%-95%, which means only a very limited fix has to be carried out"*





## Limitations of Pilot Testing of Limecraft

Regrettably, large-scale testing of Limecraft software has not yet been conducted. However, starting in September, the integration of Limecraft into both our undergraduate and graduate workflows is planned, which will enable the full-scale adoption of these software solutions. This implementation will provide valuable insights into the software's performance and effectiveness, allowing the Alliance to further optimize its use and maximize the benefits of Limecraft in enhancing collaboration, governance, and educational outcomes across all levels of study.

## Learning From All Elements of WP5 – physical and virtual infrastructure

Work Package 5 (WP5) initiated its efforts with an in-depth analysis of the existing physical and virtual infrastructure within each Higher Education Institution's (HEI's) in the alliance. Following this assessment, pilot research labs were designed and subsequently tested, ensuring their feasibility and effectiveness. Alongside this process, the WP5 team explored software solutions that would promote international collaboration and seamless digital integration within the Alliance. This comprehensive investigation ultimately resulted in the development of software solutions tailored to the alliance's needs. A tender process was conducted, culminating in the implementation of Limecraft and the FilmEU Portal as the chosen tools to facilitate enhanced collaboration and innovation across the partner institutions.

## Appendices to this report

In addition to the valuable insights provided in this report, user manuals for both Limecraft and the FilmEU Portal will be attached as supplementary resources. These comprehensive guides offer detailed instructions, tips, and best practices for utilizing these powerful tools effectively. By combining the knowledge from this report with the guidance provided in the user manuals, FilmEU participants will be well-equipped to harness the full potential of Limecraft and the FilmEU Portal, enhancing collaboration, governance, and educational outcomes within the Alliance.

Furthermore, for those interested in exploring more about Limecraft and the FilmEU Portal, the official websites for these innovative platforms can be accessed using the links provided below. These websites offer extensive information, updates, and resources that can further enhance your understanding and utilization of these tools within the FilmEU Alliance.

Limecraft: <https://platform.limecraft.com/>

FilmEU Portal: <https://portal.filmeu.eu/>



## Future Recommendations

### Enlarging FilmEU and the Formation of the digital infrastructure: FilmEU Cloud

In line with the EU Commission's recommendation, FilmEU began expanding its alliance in September 2021, with the goal of incorporating new full partners for the second phase. This process not only proved advantageous but also prompted the alliance to better articulate its identity and mission. By engaging with potential partners, the Alliance gained further clarity on its objectives. Conversations, site visits, and consultations with several Higher Education Institutions (HEIs) led to the identification of four new partners now welcomed into the FilmEU family. These new partners will be VIA University College Denmark, The Lithuanian Academy of Music and theatre, The National academy for Theatre Arts of Bulgaria and The Academy of Performing Arts, Slovakia.

As the Alliance moves forward into the second phase, it is crucial to ensure that all eight partners share the same understanding and ambition for FilmEU. Furthermore, the alliance must continue to evolve in terms of future digital strategies, governance, and virtual pedagogy to fully harness the potential of technology and strengthen its collaborative efforts across the European film education. New strategies and implementation policies will be covered under the umbrella of 'FilmEU Cloud'.

FilmEU has successfully established itself as a central hub for education, research, and innovation in the multidisciplinary field of Film and Media Arts, combining expertise from the arts and humanities to drive the cultural and creative sectors. With FilmEU+ expanding from four to eight partners, the alliance aims to enhance competitiveness by increasing its critical mass. This growth process is seen as advantageous for future expansion and development.

The initial alliance of four members laid a solid foundation, and the subsequent expansion to eight partners has provided a clearer identity and sense of purpose. As new partners are integrated into the early stages of FilmEU+, discussions have been grounded in real experiences and a transparent understanding of the expectations and commitments required from all parties.

In selecting future partners, the alliance sought Higher Education Institutions (HEIs) that share its vision for the future of film and arts education. Other criteria were also considered, such as the requirement for prospective partners to hold an Erasmus Charter. The alliance is built on a progressive and inclusive worldview and looks for partners who share the same values and outlook.

The integration of innovative digital tools, such as Limecraft and FilmEU Hub under the umbrella of 'FilmEU Cloud', plays a significant role in fostering collaboration among the

new partners in film and media projects and future research endeavours. These cutting-edge platforms facilitate seamless communication, effective project management, and efficient knowledge sharing, enabling alliance members to work cohesively across geographical boundaries. By harnessing the capabilities of Limecraft and FilmEU Hub, the alliance can foster greater innovation, drive multidisciplinary research, and contribute to the ongoing development and success of the European film and media arts sectors.

## Update on FilmEU Labs

### Virtual Film Lab

Advancements in technology are shaping the way artists create new cinematic experiences and the FilmEU Virtual Production Lab at Lusofona University is a cutting-edge space for experimentation at the frontiers of digital production. It is a film studio that provides access to traditional film equipment, as well as new virtual technologies including a large LED wall connected to a game engine, along with camera tracking systems. These technologies allow for the combination of real-time filming techniques with virtual environments. In addition to these features, the Lab also provides various motion-capture systems and 360 sound recording equipment, as well as an attached Atmos (full immersion) sound design and mixing studio for 360 audio production.

The Lab reflects the current trend in filmmaking, where there is a growing use of synthesis between live footage and synthetic imagery. This process requires advanced technologies that span several artistic domains, including visual storytelling, immersive environments, game engines, virtual 3D spaces, artificial intelligence, and immersive sound. The Lab is thus appealing to a wide range of researchers and artists, including filmmakers, visual artists, game designers, animators, and sound artists.

The Lab is a space that encourages experimental and technological exploration for cutting-edge film productions and artistic creations. It is also ideal for research on new technologies and artistic approaches to audio-visual creation. Overall, the Virtual Production Lab is an exciting and unique space that brings together artists and technologies to push the boundaries of cinema and storytelling.

Currently, the Virtual Production Lab is in an advanced design stage, and the construction work to upgrade an existing film and television studio to a virtual production studio is set to begin in July 2023. The set-up of the technologies in the studio will be developed during the first semester of 2024. In the meantime, Lusófona is laying the groundwork by developing protocols with partners from the academy and creative industries. A partnership with Epic, the developers of the Unreal engine, has already been established, providing training to students, researchers, teachers, and

staff. FilmEU has partnered with CineDesk, a virtual application developed by the Immersive Arts Space and Film of the Zurich University of the Arts, which also runs on Unreal. This application provides a virtual solution for planning and simulating within virtual spaces. Recently, Lusófona and IADT, within a larger consortium, applied for an Erasmus EDU grant (101139876 – EDGES) that explores new roles or professions created by these new technologies within the creative industries and how to update curricula to train new artists within the virtual production scope. In addition to the implementation of the Lab, Lusofona has already expanded our primary mixing stage from 7.1 to Atmos, thus enabling the full audio complement for immersive research. At the outset of FilmEU+, we expect to be running forward with experimentation and collaborative research in both the visual and audio components of the Virtual Lab, inviting partners from across the consortium and industry to our Lab.

## **IADT Sound Lab**

The sound lab has recently seen significant utilization by KinoEyes students during the post-production phase of their graduate films. This development signifies the integration of advanced resources into student practices, reflecting our commitment to providing hands-on experience with cutting-edge technologies. Furthermore, both staff and students are currently undergoing upskilling in Dolby Atmos, a state-of-the-art sound technology, indicating our continuous strive for professional development. The acquired knowledge and skills in this domain are set to be integrated into their practice going forward, thus enhancing the quality of our audio production and enriching the learning experience for our students.

In the forthcoming FilmEU+ phase, we anticipate the sound lab will extend its collaborative reach to include other FilmEU labs, thereby fostering an environment of shared resources and collective learning. A particular area of interest lies in facilitating collaborations on joint Master's and Bachelor's projects. By enabling these inter-lab collaborations, we aim to enrich the learning experience of our students, and to stimulate innovation by merging various areas of expertise. We believe this approach not only strengthens the academic output but also bolsters the interconnectedness of the FilmEU network, reinforcing our shared commitment to academic excellence and industry relevance.

## **BFM Production Lab**

Tallinn University Baltic Film, Media and Arts School is developing its BFM Production Lab. It is an interconnected contemporary facility allowing students to produce professional level short films, documentaries, television projects, virtual and hybrid event productions. All steps in production (preproduction, production, postproduction and cinema screening) can take place in one integrated facility. The Production Lab concept has proven itself in the context of the work done during Kino Eyes programme as the main technical base for the production of students' graduation films.

During spring 2023 editing rooms and colour grading rooms were updated with Mac Studio workstations and Blackmagic Design Cloud Store fast 80 TB SSD-storage. BFM is looking into upgrading the sound studio to Dolby Atmos and colour grading rooms to Dolby Vision. Additional financing is needed for that.

In the forthcoming FilmEU+ phase BFM Production Lab will focus providing a state-of-the-art calibrated production environment for all student productions within BFM and in cooperation with FilmEU+ partners.

## LUCA XR Lab

At the XR lab or eXperience Research lab spread across the five LUCA campuses, new visual and sonic applications are tested and developed for future filmmaking. This XR lab of an intercampus collaboration is now extending to the FilmEU partners to broaden the impact of research working with filmmakers and the industry, exploring the creative use of 3D sound, AI, XR with clear goals to be reached in the coming years: exchange assets in a common pipeline between FilmEU labs, define new workflows, making use of virtualisation and hybrid setups, capture spatial information for both sound and image, allowing more post-production freedom, collaborate remotely while working on the same files in virtual space.

As a testcase for the XR lab, the *Audio Mocap* project, exploring motion capture for sound in a 360° environment was successfully conducted. The research is situated in the context of the production and post-production of 360° film to provide solutions for specific problems that arise in the recording process and post-production of sound recordings for such a film. More specifically, we are dealing with two types of sound recordings: spatial and non-spatial sound recordings or, in other words, sound recordings in which the movement in the acoustic space is included in the recording versus recordings in which it is not. To spatialize the latter, the process is a highly time-intensive and meticulous for which there is limited time during the postproduction phase, thus evoking the research question: 'Can we use real-time capture to encode and transfer the spatialization of sound and play it back via simple hardware and open software?' We set out to find a method to spatialize those sound sources and to do so in a way that could be done smoothly and automatically. We also developed a workflow that can be used by third parties and that are format agnostic. The main result is a working method, based on video images captured with a 360° camera, to control software that accurately performs the spatialization of non-spatial sound sources. In the process, it proved possible to do this with multiple sound sources moving in parallel. The next steps are to disseminate the findings and integrate this workflow into the future FilmEU+ and professional practice.

During the Audio Mocap project, the E.A.R., or Escape Audio Room was developed to gain insights into sonic orientation. In the Escape Audio Room, with minimal visual stimuli, the idea is for the "participant" to orient themselves based on sounds and thus find their way to the end of the game through four "levels" that become increasingly complex. E.A.R. has

the potential to fuel an investigation in itself; an investigation of spatial orientation based on sound in virtual space. With E.A.R., we were able to show that people can orient themselves quite well based on auditory cues. This shows that sound spatialization is an important part of immersive content and that a neat, correct spatialized audio image contributes to a valuable experience.

## Conclusion

In conclusion, FilmEU aspires to be a space for creativity, cultural diversity, and global impact, both physically and virtually. As the Alliance continues to evolve, the implementation of advanced cloud based software solutions like Limecraft and the FilmEU Portal becomes increasingly crucial for optimizing governance, enhancing educational opportunities, and promoting collaboration within the Alliance. This concise report provides an overview of these two innovative platforms, their roles in governance and educational implementation, and future recommendations for maximizing their potential.

Work Package 5 (WP5) started with a comprehensive analysis of the existing physical and virtual infrastructure in each participating institute of higher education. Subsequently, pilot research labs were designed and tested for effectiveness. In parallel, the WP5 team explored various software solutions to facilitate international collaboration and digital integration within the Alliance. This investigation led to the development of tailored software solutions, a competitive tender process, and ultimately the implementation of Limecraft and the FilmEU Portal. These cutting-edge tools have become instrumental in fostering seamless cooperation and enhancing overall efficiency within the Alliance. Our analysis in this report showcased the core functionalities of Limecraft software and the FilmEU Portal, spotlighting their contributions to FilmEU pilots thus far. We examined how these tools have been successfully integrated into governance and educational practices, showcasing case studies and examples of best practices.

This report also presents forward-looking recommendations for the future development and use of Limecraft software and the FilmEU Portal. These insights are based on our analysis of the software, pedagogical implementation, and the future vision of FilmEU and will be called 'FilmEU Cloud'. By providing a comprehensive yet succinct overview of Limecraft software and the FilmEU Portal, this report aims to inform and inspire FilmEU participants to leverage these tools for improved governance, education, and collaboration within the Alliance.