The position of technology within virtual cinema and hybrid models

by Medialoc

The heyday of technological innovation

Where physical screenings suffered back in 2020 and 2021, virtual screenings blossomed. During the pandemic, film exhibitors did not really have a choice and massively moved its

program online. Technically, virtual cinema took a huge leap forward in a short time-frame because of this.

During the REACH'M project - a three year project by Dutch virtual cinema pioneers Picl and Medialoc - we made use of this momentum and explored how this technological peak could be best anchored and further nurtured. We aimed to explore how hybrid technical solutions could best support European cinemas and distributors in reaching their audiences, doing so through a number of technical pilots and innovations in the course of 2022, 2023 and 2024. Moving technical solutions from ad hoc and reactive to sustainable in order to strengthen European arthouse cinema for the long term.

Technology as driving force

Before we delve into the results we have achieved with REACH'M, it is important to first provide context about the background of these technical developments and the choices we made in this regard. Therefore, we will first discuss the relationship between the technology underpinning film exhibition and the opportunities or limitations it creates for establishing a business case for film exhibitors.

Film is a technical medium. The emergence of modern film exhibition as we know it today is rooted in numerous technological developments. These range from the first capture of still images between 1826 and 1830 by pioneers like Niépce and Daguerre, through the development of early "film cameras" by figures such as Muybridge and Marey between 1870 and 1885, the invention of the first celluloid film by Dickson, and the creation of the first projectors and lenses, culminating in what is widely regarded as the first public film screenings in 1895 by the Lumière brothers. Together, these various techniques established the technical prerequisites that ultimately made public film screenings exploitable.

Looking at the history of film exhibition, we see that technology and technical innovation have always been key enablers for creating business models around film exhibition. From technology distinction can be made between technology that facilitates existing business cases to technological innovations that allow existing business cases to be executed more efficiently, effectively, and affordably. An example of this is the standardization of celluloid film width and perforations in 1909, which allowed films to be released globally in a single format and projected on any cinema projector. Another example is the establishment of the global DCI standard in the early 2000s, which created a worldwide standard for digital cinema. This

digitization brought efficiency gains in various areas. Distribution costs for films decreased significantly because creating and shipping digital copies was much cheaper than producing and distributing film reels for projection. Cinemas also benefited, as digital projection enabled automation, reducing or eliminating the need for technical staff to operate projectors. Furthermore, cinemas could suddenly program the same film simultaneously in multiple screens, which was previously impossible due to the limited availability of physical film reels.

The aforementioned demonstrates how technical innovation creates new conditions for certain aspects of the existing business case for "traditional film exhibition," such as staffing costs, distribution costs, and programming flexibility. At the same time, technology and technical innovation can also play another role in cinema: that of a driver for new business models. A prime example of this is 3D exhibition. With the (renewed) rise of 3D films in 2009, driven by movies like *Avatar*, cinemas were able to introduce a new attraction to their audiences. Not only could they offer an additional version of the film, but also generate extra revenue through, for example, the sale of 3D glasses. Throughout the history of cinema, we see several such initiatives where technology not just improves but opens up new avenues for exploitation by cinema owners. These range from additional attractions such as 4D film with special effects and ScreenX with multiple screens for a more immersive effect to personalized, 'boutique' cinema screenings such as *The Anything* in the Netherlands.

While the distinction between technology as a facilitator and as a driver of business models is not always clear-cut, it provides a framework when exploring how technology can be used to enhance and transform business cases for cinema. We use this framework to help frame the technological innovations within REACH'M. Over the past three years, a collaboration of Medialoc, Indyvideo, and Marteco has explored ways to use the underlying technology for Virtual Cinema more efficiently on the one hand and more innovatively on the other. This involves not only the technology for online film viewing, such as streaming, but also a broader scope that includes how these elements are integrated into websites, ticketing, and film distribution. The goal is to examine whether we can better support business models for Virtual Cinema or identify new opportunities in this area. And how we can use technological innovation, rapidly developed in the past few years, in a sustainable way so it can cater a hybrid viewing situation.

Route 1: Technology as a Facilitator and Booster of Existing Models

When examining the role of technology as a facilitator for existing models, we focused on two key aspects. On one hand, we explored how to reduce or mitigate the technical barriers to using the technology. On the other hand, we investigated whether technology could further enhance efficiency or introduce other improvements in the process of online film screenings.

Initial Pilots in the Netherlands and Belgium

To evaluate the technology associated with online cinema screenings, we adopted two guiding principles. Firstly, it is essential to note that online film screenings demand a different technical expertise than screening traditional films in a screening room. Streaming video is a completely different technology from projecting films on a digital projector, introducing a new domain of knowledge for cinema organizations. This shift involves new technical standards for screening and security, different vendors, and unique limitations compared to traditional screenings.

Simultaneously, online screenings do not occur in a technical vacuum. Many cinemas already have existing systems in place, such as ticketing systems and film programming databases. To ensure the successful rollout of Virtual Cinema, we focused on making the technology for online screenings as accessible as possible while integrating it with existing systems.

To explore this technology, we utilized the MediaContainer. This tool was initially developed for Dutch film festivals during the COVID-19 period of 2020-2021 to enable them to showcase films and events online. The tool was designed to allow organizations to present online screenings on their own websites, leveraging their existing systems.

As the first step in our project, we investigated how to assist two types of organizations with technology. For a business model where an arthouse cinema organizes online screenings, we collaborated with the Dutch Film Theater Consultation (NFO) to equip fifteen cinemas in the Netherlands with the MediaContainer. Concurrently, we examined how distributor and film festival Mooov in Belgium could use the MediaContainer to organize screenings. This allowed us to test the role of technology within different potential business model templates: one where

the cinema itself initiates a streaming channel, and another where a rights holder manages the channel.

In the Dutch pilot, we focused on aligning the technical flow for visitors as closely as possible with the existing experience. For the MediaContainer, we integrated it with cinemas' ticketing systems, enabling users to purchase tickets for online films just as they would for offline screenings. This created a seamless visitor experience across both formats. Cinemas could offer films directly on their websites, with MediaContainer providing technical support for configuring the online shows and offering visitor assistance where needed. Additionally, we adapted our API to integrate other cinema systems with the online screening tool, delivering a fully integrated solution. After installation, cinemas essentially had an online screening room added to their websites, with major technical barriers, such as the viewing platform and technical support, effectively removed.

The outcomes of this phase highlighted certain challenges. Many cinemas operate on limited resources for programming, and expanding their staff's scope to include online screenings proved difficult. Although the technology was ready for use, its practical adoption was limited. External factors also influenced this. The deployment coincided with the end of the COVID period, shifting organizational priorities to attracting audiences back to physical venues—a more challenging task than anticipated. Additionally, rights holders were hesitant to provide online versions of their films, and many cinemas struggled to define their vision for the online screening room. What purpose would it serve?

Conversely, our partner Mooov in Belgium faced fewer of these obstacles. Without their own cinema, they did not need to focus on filling physical halls. As a distributor, they had the rights to the films, and their organization had clearly defined ownership, role distribution, and programming focus for online activities. Mooov successfully used MediaContainer for public screenings during their festival and educational viewings through "vision weekends."

Next Steps

Building on these initial insights, we explored initiatives to further support cinemas and distributors in the realm of Virtual Cinema. We translated the findings of their European Virtual Cinema study into an online toolkit. This toolkit provides guidance for cinemas and other stakeholders on how and why to adopt online screenings. Additionally, we launched a mailing campaign to share the outcomes of our efforts and the toolkit across Europe.

Another initiative examined how we could assist cinemas and distributors in navigating the post-COVID cinema landscape. A shared sentiment among stakeholders is that "online is here to stay." However, during the REACH'M project, it became apparent that online screenings in cinemas would always coexist with traditional screenings. This duality presents a challenge, as distributors and exhibitors must manage both formats technically.

To address this, we developed a hybrid distribution system. This system enables users to manage online screening copies and traditional screening copies within a single platform. It supports receiving, transcoding, organizing, and publishing online screening copies on various websites while also managing copies for traditional screenings.

We tested this system with film festivals as partners, chosen for their similarities with cinemas in programming, their use of both online and offline screenings, and their concentrated periods of activity. The initial pilot results were promising. The system facilitated the global delivery of over 1,500 films to festivals in the Netherlands, directly from producers, sales agents, or distributors. Multiple copies per film were often delivered, including both a DCP (Digital Cinema Package) for in-theater screenings and an online file for public or internal viewing.

To assess the system's utility for cinemas, we also used it to exchange screening copies between cinemas in different cities within the Netherlands. This approach demonstrated the system's potential to support an ecosystem where rights holders and exhibitors can efficiently exchange necessary film files. By lowering running costs, the system reduces barriers for both parties to adopt hybrid screening formats.

Beyond enabling hybrid business models, the system creates opportunities to explore new applications of online technology and hybrid screenings. We will delve into these developments in the next section.

Route 2: New Business Opportunities Through Online Technology

In the REACH'M project, we explored technical solutions that could drive new business models for Virtual Cinema. One idea arose from feedback from our partner projects with NFO and Mooov, highlighting the desire to use online video not just for individual home viewing but also to enable (small) groups to watch films together online. For example, this could support educational screenings where an entire class views a film collectively.

One challenge with such group screenings is that the locations often lack professional playback equipment. Currently, these screenings rely on distributing DVDs and Blu-rays. This approach comes with logistical inefficiencies, playback challenges, and the diminishing quality of DVDs compared to modern standards.

Online cinema offers a solution by enabling films to be streamed directly in a browser, eliminating the need for additional playback equipment beyond a computer. However, this requires a reliable internet connection, which is not always available. To address this, we developed an "offline player" in collaboration with Mooov and Fraterhuis, a Dutch arthouse cinema. This player downloads the stream in advance, storing it locally while maintaining file security through encryption. Both Mooov and Fraterhuis successfully piloted this technology, using it for schools and outdoor screenings.

This new technology introduces a hybrid form of screening for cinemas—a mix of online cinema and traditional group viewings. Audiences still watch together, but the online technology allows these group screenings to take place outside conventional film theaters, unlocking new screening opportunities and access to broader audiences.

Film Screenings in New Contexts and for Larger Audiences

In another pilot, we explored reaching new audiences through innovative technical integrations. Working with Belgian festival and distributor Mooov, we partnered with several libraries in Belgium. By integrating Mooov's content with the library membership system and website, library members could watch Mooov's films directly via their local library's online platform.

This initiative demonstrated how technical integrations with external systems can reach a more diverse and larger audience beyond Mooov's usual viewers, reaching a new audience for European arthouse cinema. The revenue model also shifted; instead of charging per film, payments were handled through library memberships.

Expanding Programming Opportunities

We also observed how online technology can significantly expand the reach of programming. For several years, the EYE Filmmuseum used the MediaContainer during its Global Archiving Conference to engage both in-person and global audiences. Online participants could follow the program, submit questions, engage in discussions, and view showcases on the website. The online format also allowed the program to remain accessible for an extended period, whereas previously it was limited to a live event.

The Role of Technology in New Business Models

Through the REACH'M project, we discovered how Virtual Cinema's online technology facilitates new screening models and contextual programming around films. These technological advancements offer opportunities to reach larger audiences, experiment with new programming formats, and explore alternative screening methods.

For example, we observed exhibitors using streaming technology not just to screen films but also to engage industry professionals. This includes online film screeners for review, purchase, programming and critique purposes, through individual online screeners and creating a library for professional screenings. This shift has created a new revenue stream by leveraging technology to serve professional audiences.

Future thoughts

In recent years, we have explored the role of technology within business models for virtual and online cinema. This included examining how technology currently facilitates existing business models and how it can better support them, as well as how technology can serve as a foundation for new opportunities.

During the project, we navigated a changing media landscape. At the start of the project, COVID-19 restrictions were still in effect, emphasizing the need for online screenings. However, as the project progressed, the focus shifted back to traditional, in-person film screenings. This shift significantly altered the role of online cinema: what initially had been a central focus quickly became more of a supplementary offering.

At the same time, online screenings have not disappeared. We believe it is essential to explore models where hybrid forms of exhibition—combining physical and online screenings—take center stage. In future projects, it would be valuable to investigate how these two formats can complement and strengthen each other. During the REACH'M experiments, for instance, we saw promising results with contextual programming tied to physical film screenings. However, no clear model has emerged for this yet, and further development could provide valuable insights.

Challenges of Hybrid Screening Models

The hybrid screening model introduces challenges for exhibitors, rights holders, distributors, and sales agents alike. Previously, the focus was solely on facilitating physical screenings. Now, an entirely new online component must be managed, which brings unique hurdles.

One significant challenge lies outside the technical domain: limited human resources in arthouse cinemas, which makes it difficult to devote equal attention to both formats. Consequently, online screenings often receive less focus compared to their physical counterparts. Another pressing issue is the discussion around screening rights and the interrelation between a film's theatrical release and its virtual release, as exhibitors and distributors grapple with questions about how to make rights available for online use.

Potential Solutions

Some solutions lie outside the technical domain, such as collaborations where cinemas jointly offer an online platform, like Picl in the Netherlands. At the same time, we explored technical solutions to address these challenges. One such solution was the hybrid distribution platform, which allows all necessary screening copies of a film to be shared between exhibitors and rights holders within a single platform.

Future technological possibilities also hold promise. For instance, a system for organizing screening rights could save all parties significant time and resources.

Looking Ahead

There are many opportunities to build on the developments from REACH'M in future projects. For now, we reflect on a project that successfully explored the role of technology within business models for online and virtual cinema. The future of film distribution and screening lies in hybrid models that combine physical and virtual elements to extend their reach. During the REACH'M project, we explored how hybrid technical solutions could best support European cinemas and distributors in reaching their audiences.

During the last few years, technology made a huge leap forward in supporting this in many ways. Therefore technology no longer seems to be the biggest barrier.

With the aforementioned case studies we demonstrated that technological innovation is key, key in democratization and durably strengthening the position of European cinema. Creating technology that is open, supports any chosen business model and moves with the industry's evolving needs. Most importantly, we must look beyond technology as merely a facilitator; it should be seen as a driving force for innovation and growth.
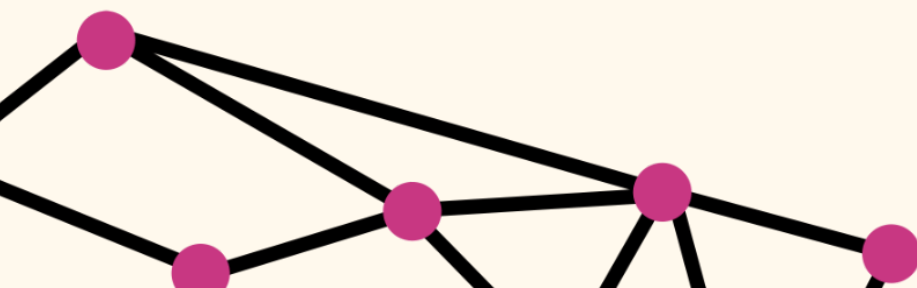
Appendix: technical activities overview within the REACH'M project

Pilots to test technology that support business cases

Connecting NFO Theatres to MediaContainer (NL)	Integration MediaContainer in 15 theatres: - LantarenVenster - Mimik - Forum Groningen - LUX - De Lieve Vrouw - Eye Filmmuseum - Chassé - Rialto - 't Hoogt - Het Ketelhuis - De Fabriek - Verkadefabriek - Filmhuis Den Haag - Concordia - Schuur
Mooov (BE) using MediaContainer	
Hybrid distribution portal for International Documentary Festival Amsterdam (2023 / 2024)	
Hybrid distribution portal for International Film Festival Rotterdam (2024)	
Hybrid distribution portal for Netherlands Film Festival (2024)	
Hybrid distribution portal for Cinekid (2024)	
Hybrid distribution portal for other festivals (2024)	

Pilots to test new technical opportunities

Mooov - Connecting libraries	Connecting libraries to showcase films to members of the library: - Turnhout - Peer
Offline viewing page	- Pilot Fraterhuis - Pilot Mooov in Belgium
Online screener platform	Using the platform as a way of preview platform for festivals for selection, programming and judging of film - Netherlands Film Festival (2022, 2023 and 2024) - IFFR (2023 and 2024)

Developments

Connection to various ticketing systems	
Public API developments	Adjustments to public API so external parties can integrate into the system.
Developments in managing portal for MediaContainer and Filmfetch (hybrid distribution)	- Organizing content and shows in collections and titles - Deletion of content and storage
Developments in uploader for content	- Supporting new file formats - Supporting new languages, including SDH-specific audio tracks - Supporting new subtitles, including SDH-specific subtitles - Updating usability of uploader
Datastores and data-engine	Creating the technical backbone for data analysis and data storage
Plugin for website	- Easy integration of plugin for online shows in website

	- Adding functionality for public interaction to plugin
Offline player	Possibility to playback online stream in offline environment
Archive solution	Creating the possibility to store films for a longer period of time, so they can be stored and shared more easily by partners in the project
Integrations	- Integration with Fiona, the film festival management database, for the film festival pilot - Integration with library system Belgium, for the pilot with Mooov with Belgium libraries - Investigating integration with Eventival, film festival database - Investigating integration with Filmbooking, rights management software

Promotion and knowledge sharing

REACH'M website	Creation of REACH'M-website for information about the project and project updates.
Toolkit: Getting started with Virtual Cinema	Creation of online business toolkit for Virtual Cinema.
Insight articles on role of online screenings in relation with technology	Six articles
European Mailing Campaign 1 + 2	