

How Museums Can Leverage Live Streaming Technology

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INTRODUCTION

Over the course of the past decade, museums have exploited video and live streaming for audience engagement and development tactics. The American Association of Museums recently highlighted the importance of using YouTube video to engage visitors and extend the organization's reach¹. A more recent trend, live video streaming, has been attempted by a myriad of museums in three major ways:

- 1) To give a real-time look at **exhibitions and guided tours**
- 2) To let everyone participate live in **special events**
- 3) To allow interested parties to check the status of a collection at any time through **WebCams**

Live streaming's unique features add value to a museum's mission and enhances the connection with its audience differently than traditional online video, yet there is little data available on its effectiveness on the audience experience. However, according to our findings, a well implemented live stream program could in fact encourage audience interaction and increase its interest in the museum's activities. To provide practical insights for arts managers, this paper presents different approaches to video streaming through the analysis of case studies, including the necessary technologies, their costs, and their impact on the museum visibility and outreach.

1. Live Streaming of Exhibitions



Figure 1. A technology that allows you to stream live events (Kate Duggan 2017)

1 Kehl, Winifred. "What YouTube Can Do for Museums". The American Alliance for Museums. Sep-Oct, 2016. <http://www.aam-us.org/docs/default-source/annual-meeting/what-can-youtube-do-for-museums.pdf?sfvrsn=0>

1.1 Approach

Many cultural organizations have used video to promote and connect with audiences. In this section, we will look at the reasons behind this choice. Moreover, we will clarify why and how certain organizations have recently started to expand the use of traditional videos through the live streaming of their collections.

The online publication of video content has reached incredible results in terms of popularity. According to a report from [Horowitz Research](#), 76% of adult internet what video content at least weekly, and 44% watch daily. Well-packaged short-form videos are the most successful at audience and brand building, because they are easily shared on social media. The flexibility of video supports like smartphones and tablets has allowed expanded hours for viewing during the day, leading to a direct competition of videos with traditional TV programs.² So, how does this apply to museums? Many traditional museums have successfully engaged with the creation of videos to foster their relationship with audiences. In 2014, the Field Museum in Chicago acquired the YouTube channel The Brain Scoop, which featured science related videos. Demonstrating the channel's success, just one year later, the online fan community collectively donated more than \$155,000 to help build a new habitat diorama in the museum,³ and the channel now boasts 340,000 subscribers. YouTube channels have generally proved to be a good investment for museums without being insurmountably expensive. Even though they require time and resources, creative, high quality mini-documentaries are highly trusted to deliver accurate information, and help increase the awareness of museum programs. Also, a museum's online presence and continuous engagement in video

2 Wong, Stephanie. "Are Cat Videos Eclipsing Prime Time TV? Latest Horowitz Study Sheds Light on Short-Form Viewing Behaviors". Horowitz Research. Sep.27,2016. <https://globenews-wire.com/news-release/2016/09/27/875035/0/en/Are-Cat-Videos-Eclipsing-Prime-Time-TV-Latest-Horowitz-Study-Sheds-Light-on-Short-Form-Viewing-Behaviors.html>

3 Brouwer, Bree. "Vlogbrothers Sell 'The Brain Scoop' Channel To Chicago's Field Museum". Tubefilter. Dec.4, 2014. <http://www.tubefilter.com/2014/12/04/the-vlogbrothers-brain-scoop-sold-field-museum/>

production offers the chance to further cultivate and expand their fan base.⁴ But, how exactly does live streaming differ from YouTube, and how does it enhance a museum's outreach? Producing live content means broadcasting real-time video feed to an audience while the event is taking place. Applied to museum operations, live streaming has produced interesting outputs. Rather than simply presenting digitalized online collection like [Google Arts & Culture](#) does, some museums have started filming curators, artists and educators, while presenting permanent collections and new exhibitions.

1.2 Examples: The Los Angeles County Museum of Art and The J. Paul Getty Museum

Museums in southern California have recently started experimenting live streaming. The Los Angeles County Museum of Art has fully embraced this strategy by publishing live videos on its [Facebook page \(LACMA\)](#). One of its most successful posts was the live conversation between users and the filmmaker Guillermo del Toro, where he explained his ongoing exhibition "At Home with Monsters." Users were invited to leave their questions in the comment section of the page, which were read in real time to del Toro. For twenty minutes the artist engaged with his audience, leading to more than 1.2 million views, 6,000 comments and 16,000 shares. The LACMA's social media manager Lucy Redoglia expressed her satisfaction with the response, and explained how the museum is embracing live streaming video on social media to draw in new demographics outside of the usual visitor.⁵ The museum continues to post one live video per week, and asks followers for feedback. This is an active strategy on their end in order to raise their profile and deepen audience relationships. For example, the live video series "The Art of Looking" features several museum educators leading brief insights of ongoing exhibitions, such as "The Birds of Maso America" on Maya and Mexican mythology. They have also featured educators leading fifteen-minute

4 Kehl, Winifred 2016, p.28

5 Barrera, Sandra. "L.A. museums embrace live streaming", Los Angeles Daily News. Apr.9, 2016. Accessed Nov.12, 2016. <http://www.dailynews.com/arts-and-entertainment/20160904/la-museums-embrace-live-streaming>

analysis of specific works, such as the Modigliani's "Young Woman of the People." Videos are often shot with a simple tablet by the social media manager or another staff member. During these live streams, educators directly address viewers, who immediately engage by asking questions and becoming a part of the conversation.

The J. Paul Getty Museum's approach is quite similar. Its Facebook "TV Livestream" and "Paintings" video series show curators interpreting single works of the collection, or educators giving tours to visitors.

Adrienne Luce, digital communications manager of the Getty museum, said the episodes on Rembrandt had an impressive global resonance, with viewers commenting from Spain, Nova Scotia and Japan.⁶ According to the [Getty Facebook page](#), videos reached a consistent audience, with views often between 3,000 and 6,000. Some videos reached 14,000 views.

But Facebook is not the only platform where organizations can post such content. Some museums are starting to realize the potential of other social media platforms for live streaming. The most successful live stream initiative by the Getty was "[Literally Anything at the Getty](#)," for which the museum created videos through the Periscope platform and broadcasted them on Twitter. Every week followers of @thegetty had the chance to ask educators anything on a particular work of art for 5 minutes. The educator Andrew Westover would respond live from the Getty Center. He used to film the works on his own with a simple iPhone, personalizing videos and giving viewers a sense of intimacy with him. While comments and likes were being posted, hearts and tweets would appear on the screen, allowing him to see them instantly and connect with his audience. Westover's increased capacity to interact on a more personal basis with people certainly played a role in the success of the initiative, which ranged from 600 to 5,600 views per video, and built a network of 5,000 Periscope Getty channel subscribers and 1.1 Twitter followers.

6 Barrera, 2016

1.3 Technology

It can be very affordable to live stream through social media. For all the examples provided so far, videos were not in HD – they were simply shot with a regular Smartphone or small camera. The camera operator can easily be a staff member. Facebook now allows all users to shoot and share live video at no cost, but if the organization opts for a video provider, it may have to pay the service between \$199 and \$1000 per year⁷. Access to high speed internet at the venue is a necessary component, but for producing short videos the problem can be overcome by a monthly subscription to any internet provider for a maximum of \$360⁷ a month. It is also possible to directly use a smartphone's private connection.⁷ Costs connected to the social media management should be factored in, but since many museums have already implemented social channels and have employees assigned to the task, additional expenses will probably be limited to a small increase in their wage, if any, for the job of a social media department is to engage with users.

1.4 Impact

Overall, some of the benefits of live streaming are similar to traditional YouTube videos. Any kind of video increases access to the museum's exhibitions and it presents a less intimidating entry point to viewers who are not regular art attendees. However, there are some distinct differences. A traditional YouTube channel can increase the museum visibility by hosting past recordings of guest speakers, virtual exhibit tours, and promotional videos for upcoming events, but the primary aim of live video streaming is to deepen the relationship between the museum and its audience in real-time. The core assumption is that live streaming should encourage active audience participation, which can directly engage in the conversation by asking questions and sharing observations with the speaker and the rest of the online community.

After clarifying differences between videos and live

7 Bischof, Drew. "How much should a professional produced live streaming Webcast cost?," Quora, July 2012. Accessed Nov.26, 2016. <https://www.quora.com/How-much-should-a-professional-produced-live-streaming-Webcast-cost>

streaming, we might ask, what difference in results can live streaming produce and how is it possible to measure the impact of these initiatives? What is the true output of the live streaming of collections? How do we measure impact and output? First of all, the count of actions taken on social media, including "likes," "comments" and "shares." Secondly, data collected by analytics services, such as Google Analytics, that track website traffic. Finally, surveys of users and those running these programs, such as social media managers and heads of digital media departments. The Los Angeles County Museum of Art and the J. Paul Getty Museum could be said to have performed well up to this point on Facebook and Twitter, as many attendees have left passionate and relevant comments. But are comments in the moment sufficient? The Los Angeles County Museum of Art started posting live video content as early as summer 2015, yet user action has not reached a consistent state. While posts reach an average of 10,000 views and some content has had high user feedback and usage (likes/comments/shares), others have generated only a few views.⁸ Tracking the physical visits that results from live streams is also difficult, and requires a large market research effort. Finally, it is important to know that the connection between the organization's goals and defined community must relate to these evaluations. Although currently, there is a lack of measurable impact benchmarks, professionals tend to believe live video streaming is a new way to promote and have fun with museum programs.⁹

2. Live Streaming of Special Events

2.1 Approach

The idea of implementing video streaming in museums originated from opera houses and concert halls. Performing arts organizations wanted to expand their outreach by broadcasting their live productions in movie theaters, public spaces and online. Leveraging this idea, some museums have started filming special events to broaden their audience reach and increase participation around the globe.

8 Barrera, 2016

9 NewTek, 2015

2.2 Examples: The Victoria and Albert Museum and The New Museum



Figure 2. (Anna Battista 2012)

The Victoria and Albert Museum in London has a history of using video to film live special events, such as shows and talks on current exhibitions. But since July 2013, its digital media department started to autonomously produce the videos without outsourcing to expensive third-party companies and broadcast them live online. The initiative, part of the broader V&A “Digital Futureplan” project, aims to reach a consistently larger and international audience by filming the museum’s most popular programs. “Our online goal is to extend our reach to attract and engage with a larger, global audience. We have found video to be a very valuable tool for improving interpretation of objects, exhibitions, special projects and events[...]. It provides more in-depth information and enables our online visitors to have a ‘live’ V&A experience, even if they are not able to visit in person” explained Andrew Lewis, acting head of digital media.¹⁰ The program debuted by delivering in HD the [Jenny Packham Fashion in Motion](#), a series of live fashion events presented against the background of the museum.

On a much smaller scale, the New Museum in Manhattan, New York, publishes live videos of special guests on [livestream.com](#). The filming process is a simple report of the event, limited to a single camera with a fixed focus on the speaker, who addresses the audience in the museum for about one

hour and a half.

2.3 Technology

The Victoria and Albert Museum purchased a TriCaster 460 live production system from NewTek. The system allows a small team to live stream events and make them available on screens throughout the museum or on their actual website. The production crew consists of a director, three camera operators, one audio technician, a web technician, and a presenter for live interviews. The crew, who already had filming experience, still had to undergo intensive training by NewTek in mixing, encoding and streaming content live in order to be able to independently go through the whole process themselves. The overall cost of the operation was massive: it included a fixed cost of \$20,000 for the production system as well as the wages of the crew members. Moreover, in order to stream the contents online, an efficient wifi coverage was necessary. For 4000 GB’s of bandwidth consumed in about 1 hour of streaming, the museum could have paid in the range of \$0.30 to as much as \$2.00 per GB depending on the internet provider.¹¹ However, the main benefit of the self-sufficient production a long-term decrease production costs compared to when it was outsourced, and that the V&A can now tailor the service to its needs by having the complete control of it.

2.4 Impact

According to Oriole Cullen, V&A Fashion Curator, streaming video increases the reach of content by virtually increasing the size of the event, allowing more people to attend without being physically present.¹² The V&A is defined as an “international organization with global relevance,” as its programs relate to China, Russia, Middle East, and Europe. Delivering content to an international audience may align with its mission and justify the costs. However, it is important to note that the V&A’s yearly capital expenditure in the last year rose to £17.3m, and that only bigger museums have the financial resources to implement similar digital plans. The only available indicator to measure the museum’s online

10 NewTek. “Victoria and Albert Museum Brings Live Streaming In-House, Gains Global Audience”. NewTek. June 29, 2015. Accessed Oct. 1, 2016. <http://blog.newtek.com/blog/2015/06/29/victoria-and-albert-museum-brings-live-streaming-in-house-gains-global-audience/>

11 Bishof, 2012

12 NewTek, 2015

performance was in 2015: the V&A counted more than 15 million unique online visitors.¹³

The New Museum experienced different results than the V&A. Based on the number of views, videos were not very successful in expanding the museum outreach. Some videos registered thousands of views, but even the most popular ones did not even reach thirty comments by viewers. The audience was not participating during the streaming, and may have even watched the video days later its production. Part of the problem may have been the lack of a strategy dedicated to the online audience. In addition, a clear link between the streaming platform and the museum's social accounts was missing. Thus, fewer followers may have been updated on the ongoing streaming program than there could have been with a more targeted strategy. While the New Museum has more than 300,000 Twitter followers, they only have 6,000 live stream subscribers, and they tend to not share opinions and comments. While the New Museums live streaming effort ended up being mostly ineffective, this was likely because of a lack of upfront strategy and investment.

Overall, it appears that planning, promotion and financial investment makes the difference in the streaming of special events. A simple, static live broadcasting of events does not spark the interest of the audience. However, on the contrary, a refined product that delivers HD experiences to the online audience is appreciated.

3. Web Cams

3.1 Approach

A third approach to live streaming in museums involves the use of Web Cams. A Web Cam is a digital camera that sends continuous live video 24 hours a day from wherever it is located. In order to understand how museums can leverage this technology, we will look at two different approaches.

3.2 Examples: *The National Corvette Museum and the Figment project at the Warhol Museum*

The National Corvette Museum in Bowling Green, Kentucky, has installed [23 cameras](#) across its facilities. Inside, cameras film the museum spaces and its collections, whereas outside cameras focus on a racetrack. All video is visible on the museum's official website. Although the purpose of the outside camera is clear, allowing any car aficionado to watch historic car races, that of inside cameras for the online audience is less obvious. One possible use is that during visiting hours, internet users can monitor the flow of visitors, how they interact with cars, and even take pictures of relatives or themselves while visiting the museum.¹⁴ In addition, by filming when the museum is closed to the public, cameras register the staff while changing settings, moving and cleaning cars, and working on operations of mechanical maintenance. All these activities may be interesting for the museum



Figure 3. Tupelo Automobile Museum (Visit Mississippi 2009)

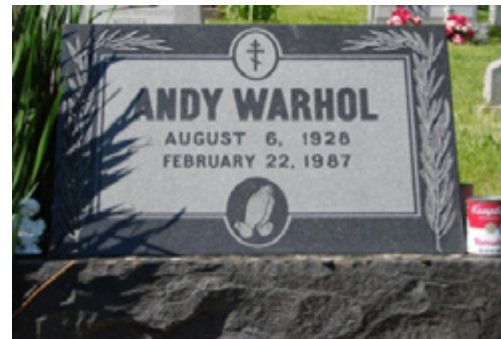


Figure 4. Andy Warhol's Grave Source (Andy Warhol Museum 2017)

13 V&A, "Victoria and Albert Museum Annual Report and Accounts 2014-2015", Gov.uk, 2015. Accessed Nov.27,2016. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/458605/Victoria_and_Albert_Museum_annual_report_and_accounts_2014-15.pdf

14 V&A, "Victoria and Albert Museum Annual Report and Accounts 2014-2015", Gov.uk, 2015. Accessed Nov.27,2016. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/458605/Victoria_and_Albert_Museum_annual_report_and_accounts_2014-15.pdf

audience, who might value knowing all behind-the-scenes activities required to manage such a niche museum. Finally, when something unexpected happens, the webcam is ready to go and spread an engaging documentation of the event. For instance, in February 2014, when the museum sky dome was struck by a sinkhole early in the morning, streaming webcams filmed eight cars being swallowed by the earth.¹⁵ Later on, all interested internet users could see the facility being repaired, workmen reinforcing the ground, and the rescue of all eight cars from the chasm.¹⁶

A similar approach was attempted by the Warhol Museum in Pittsburgh. To honor the anniversary of Andy Warhol's birthday, on August 6th, 2013, the museum set up a [webcam pointed 24/7](#) at his grave in a Pennsylvania cemetery. The project, called Figment, was launched in collaboration with EarthCam, which provided the technology. The video is visible on the [museum's website](#) and on [earthcam.com](#). Several other graves are visible, including those of Warhol's parents. The gravestone is adorned with flowers, plants, teddy bears, and cans of Campbell's Soup left by fans. Viewers can zoom in and the audio feed includes sound. According to the museum director, the project has a sense of purpose. The project could also be seen to take poetic meaning, as the art critic Peter Schjeldahl¹⁷ stated, "I find it Warholian to the, well, life: watching the present habitation of a man who liked to watch. [...] We have him to thank, or not, for prophesying reality television." Finally, the project also offers the opportunity to monitor visitors coming into the pilgrimage, watch their homage behaviors and what kinds of presents they adorn the site with. Sometimes, artists show up and perform in front of their idol, offering an

15 Paukert, Chris. "Security camera captures National Corvette Museum sinkhole as it forms", *Autoblog*, Feb,12,2014. Accessed Nov.27, 2016. <http://www.autoblog.com/2014/02/12/national-corvette-museum-sinkhole-security-camera-footage/>

16 Kozak, Graham. "Watch the Corvette rescue at museum sinkhole live on webcam", *AutoWeek*, Feb.18, 2014. Accessed Nov.27, 2016. <http://autoweek.com/article/car-life/watch-corvette-rescue-museum-sinkhole-live-webcam>

17 Schjeldahl, Peter."Grave Sight", *The New Yorker*, Aug.9,2013. Accessed Nov.27,2016. <http://www.newyorker.com/culture/culture-desk/grave-sight>

unexpected show to all online viewers. Users can share their thoughts on Twitter with the hashtag #warholFigment, and the website also encourages to check other two connected webcams. The first, [the CurchCam](#), is installed in the church where Andy Warhol was baptized, St. John Chrysostom Byzantine Catholic Church in Pittsburgh. The other, the [FigmentCam Pop Art](#), shows Warhol's grave modified in pop art colors. Finally, the museum and EarthCam partner with St. John Church: everyone can donate the Greater Pittsburgh Community Food Bank by purchasing a bouquet of flowers or a Campbell's soup can for Warhol, and see their delivery taking place through the webcam.

3.3 Technology

Costs for the installation were low in both cases, especially for the Warhol, since the EarthCam provided the cameras in-kind. For the National Corvette Museum, after the installation of webcams and the implementation of a dedicated page on the website, no additional effort was requested on the part of the museum, except for the ordinary maintenance of the devices.

3.4 Impact

The impact of these initiatives can be viewed as questionable. In fact, the Corvette Museum's webcams generated some interest among journalists and readers only because of the sinkhole. The Warhol Museum has no organic plan to attract new visitors or to engage old ones, and if its webcam initiative can have some artistic meaning, there is no real linkage between the installation at the cemetery and the museum.

Overall, the implementation of webcams to film activities going on around art pieces does not seem to add much to the museum value proposition. Museums themselves do not seem to place much emphasis on promoting web cam efforts, or about integration with the organization's overall suite of activities. In the way cameras are currently being utilized, they do not deliver much tangible value to the audience nor is there proof that they arouse the interest in visiting the museum. In conclusion, the simple implementation of webcams is not sufficient by itself to generate curiosity in a museum.

CONCLUSION

Traditional museums have implemented various live video technologies on a range of scales and costs. Thus, they have tried to uncover the potential of live video streaming for a stronger and deeper audience connection. Although this is a new trend with little conclusive evidence, it seems that several models of video streaming implementation have demonstrated tangible, positive results as described above. Leveraging social media is useful to foster the online participation of individuals, but the use of less known platforms, lack of a global position, and the lack of focus on a virtual audience can minimize impact.

In conclusion, live streaming of collections and special events for museums can potentially add value to the organization. While there is no available data that links the online participation with a visit to the museum, streaming can deepen the relationship with the online community and the cost for creating a successful format is not prohibitive. However, there are two necessary conditions:

- 1) the commitment to design a product dedicated to the online public
- 2) time investment to regularly update popular social media, even if the videos are short and created by someone with limited video experience

The true challenge for arts managers is the development of appropriate formats: live streaming should be shaped to convey a unique value to an audience that cannot be physically present but still wants to gain access from the online experience.



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