developed by **InKüLe**

# streamingkit

## hybrid formats in arts and education

Stiftung Innovation in der Hochschullehre

Universität der Künste Berlin

InKüLe

**InKüLe -** Innovationen in der Künstlerischen Lehre
The UdK-wide project explores and supports artistic and design experiments in the use of innovative media technologies for contemporary and innovative teaching, in collaboration with teachers and students. The field of work encompasses all faculties of UdK (Fine Arts, Design, Music, Performing Arts, and Centers). Potentials, limitations, experiences, creative solutions, and innovative approaches are examined and discussed to unlock and implement hybrid forms of digital teaching.

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InKüLe
Innovationen
**für die künstlerische Lehre**

Stiftung
Innovation in der
Hochschullehre

Universität der Künste Berlin

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**WHO**
Users of the *streamingkit* are teachers, students, artists, and anyone involved in hybrid teaching and learning scenarios.

**HOW**
As a tool collection of a everyday exchange in hybrid spaces, it actively responds to changing social, technical, and spatial conditions.

**WHAT**
It is the result of cross-faculty artistic teaching and practice and finds application in hybrid teaching, conferences, or research projects. The *streamingkit* proposes concrete tools for designing and implementing your own courses and events.

**WHY**
The goal is to create exchanges between disciplines and across physical boundaries, and to increase outreach and reach to new and international audiences. So it is about new access, participation and interaction. Intelligent systems and setups also enable (automated) archiving of knowledge and information. Furthermore, new forms of science and art can be developed, practiced and discussed.

# Technology

*streamingkit* ▶

The *streamingkit* has been developed as a mobile and flexible unit for the audio and video transmission of various scenarios.
The setup offers the possibilities of audio and video transmission from various media sources and input formats. The video and audio sources can be streamed into the internet as well as simultaneously projected and played back with up to four playback devices in the event space itself.
In addition, InKüLe offers a technologically reduced version in the form of a *streamingkit_ mini* for simplified live streams.

**all-in-one system:**

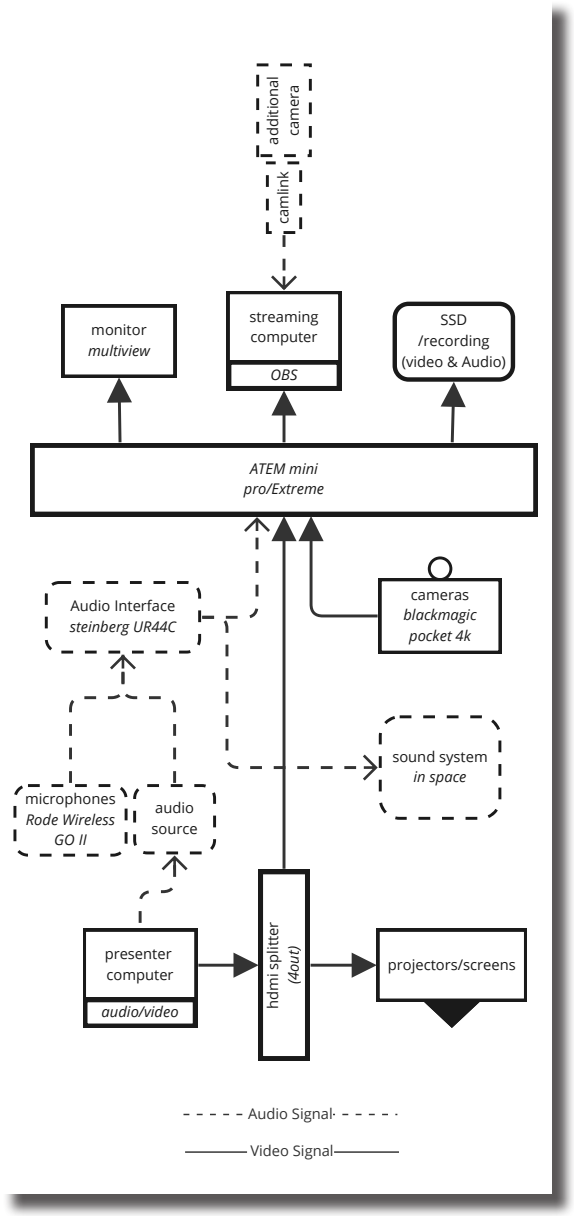
- All-in-one system:
- Streaming case with Multiview
- Eurobox system with peripherals/accessories
- Mobile with wheels
- 4 stackable boxes, each with dimensions of approximately 40x60x30cm

+Maximum flexibility
+Very high content quality
+High mobility

-Requires advanced experience in audio-video systems and streaming


Operable both standing (outdoor or mobile scenarios) and sitting (modular)

For an in depth description
please see the user manual





## *streamingkit_mini*


The *streamingkit_mini* has been developed as a simplified version and offers similar quality and flexibility with easier handling and increased mobility.

# Conference systems

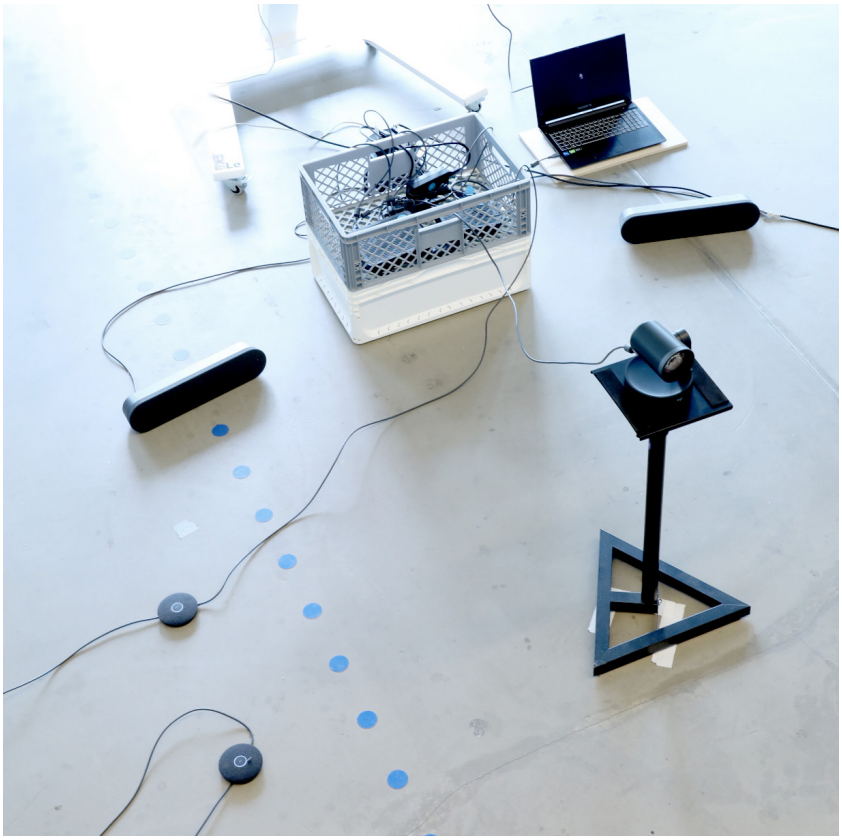
Conference systems are all-in-one technologies that enable effective and easy communication in virtual meetings and conferences. The conference systems available at InKüLe are the Logitech Rally and the Meeting Owl.

## Logitech Rally

The Logitech Rally is a powerful conferencing system that enables high-quality audio and video in medium to large conference rooms and presentations with up to 40 participants. It consists of several components, including a high-quality remote-controlled camera, a speaker, a microphone, and a remote control. The system is built into a Eurobox with dimensions of 40x60cm, making it highly mobile. The setup time is 35 minutes, and a laptop is required.

Profile:
+Very high-quality audio and video recording and playback
+Easy to use
+Moderate setup
+Camera control via remote control possible
-Limited flexibility due to the camera's restricted angle and various cables
-Limited interaction with the audience due to localized room microphones
-Not suitable for small meeting rooms (under 30 sqm) or very large spaces

You can find basic information on the functionality, setup, and use of the Logitech Rally here.



# Conference systems

## Metting Owl

The Meeting Owl is an all-in-one conference system with a 360-degree recording function. With its compact design, it enables effective communication in small to medium-sized meeting rooms. When used in conjunction with a monitor, tripod, and laptop, it can be very useful for hybrid integration of virtual guests. Additionally, it works well as an additional room camera to provide virtual guests with a spatial impression of the proceedings.

Profile:
+High flexibility due to 360-degree recording
+Very easy to use
+Good integration of digital participants
+Combination of multiple Owls possible (daisy-chained)
-Moderate quality of audio and video recording and playback
-Limited interaction with the audience due to localized room microphones
-Not suitable for rooms over 30 sqm
Guide
You can find basic information on the functionality, setup, and use of the Meeting Owl here: https://support.owllabs.com/s/knowledge/Get-started-with-your-

# **Scenarios:** streamed

Within educational scenarios, there is a wide range of formats, each with their own specific requirements. They often differ fundamentally in terms of their hybridity and interactivity, technical structure, and complexity of preparation and execution.

## Streamed (education) scenarios

At the outset, it should be said that formats that function via livestream are not automatically hybrid. Only when there is an exchange between the participants* on site and in the digital, the full potential of hybrid scenarios unfolds.
However, streams are particularly suitable for simply opening up the format to participants who cannot be on site, even if their mode of communication is rather one-sided.

Communication with the viewers is nevertheless possible, and the use of a commentary function or chat is recommended here. This must be actively supervised and moderated by a person and planned as part of the event. ("Chat asks...").

In general, the use of the UdK's own platform is recommended, as information is processed here independently of large providers. In addition, the streamed content - if desired - is archived in the user's own profile for later retrieval. Streaming and recording of the event is thus automated. The platform is available to all employees and students; login is done using the personalized UdK access credentials. Detailed instructions for using the platform can be found here.
If you have further questions about the platform or technical problems, please contact us or the developers directly at info@medienhaus.dev.
For mobile streams or special projects, services like twitch.tv, instagram or youtube can also be helpful.

In the following pages you will find some streaming formats carried out by InKüLe and their respective learnings and areas of application.

# Soundcampus Ars Electronica

Performance Festival
*mobile and outdoor setup*

Hardware: streamingkit
Software: OBS, stream.udk-berlin.de
Team(3): camera operator (1), director (1), coordination/organization/runner (1)

The Master's program Design and Computation, the New Media Class and the Generative Art / Computational class of the Berlin University of the Arts were part of the Soundcampus of the Linz University of the Arts in the context of Ars Electronica 2022. InKüLe was significantly involved in the technical implementation of the multi-day music festival. The program included broadcasts of live artistic performances at various Ars Electronica venues. The performances took place both in the exhibition buildings and at outdoor locations on the campus, which required flexible adaptation to the different acoustic and visual conditions. Experimental audio and video sources were streamed, including technologically processed textiles, sensors, and unusual audio instruments such as badminton rackets. In addition to the live program, there were lecture performances, talks, and other discursive formats.

With outdoor formats, the most important thing to consider is the changing lighting conditions depending on the time of day and weateher conditions, which means that the aperture, exposure times and iso of the cameras have to be constantly readjusted. In addition, many uncontrollable components come into play in festival formats. Anything can happen - whether positive or negative. Therefore, we always recommend to make an additional audio recording via an audio recorder as well as independent video recordings via the internal memory of the cameras in scenarios with difficult initial conditions such as poor internet connection, or spatial difficulties etc. These can be used as a backup and subsequently edited as a backup and published in the desired way.

you can find the recordings of the performances and concerts here

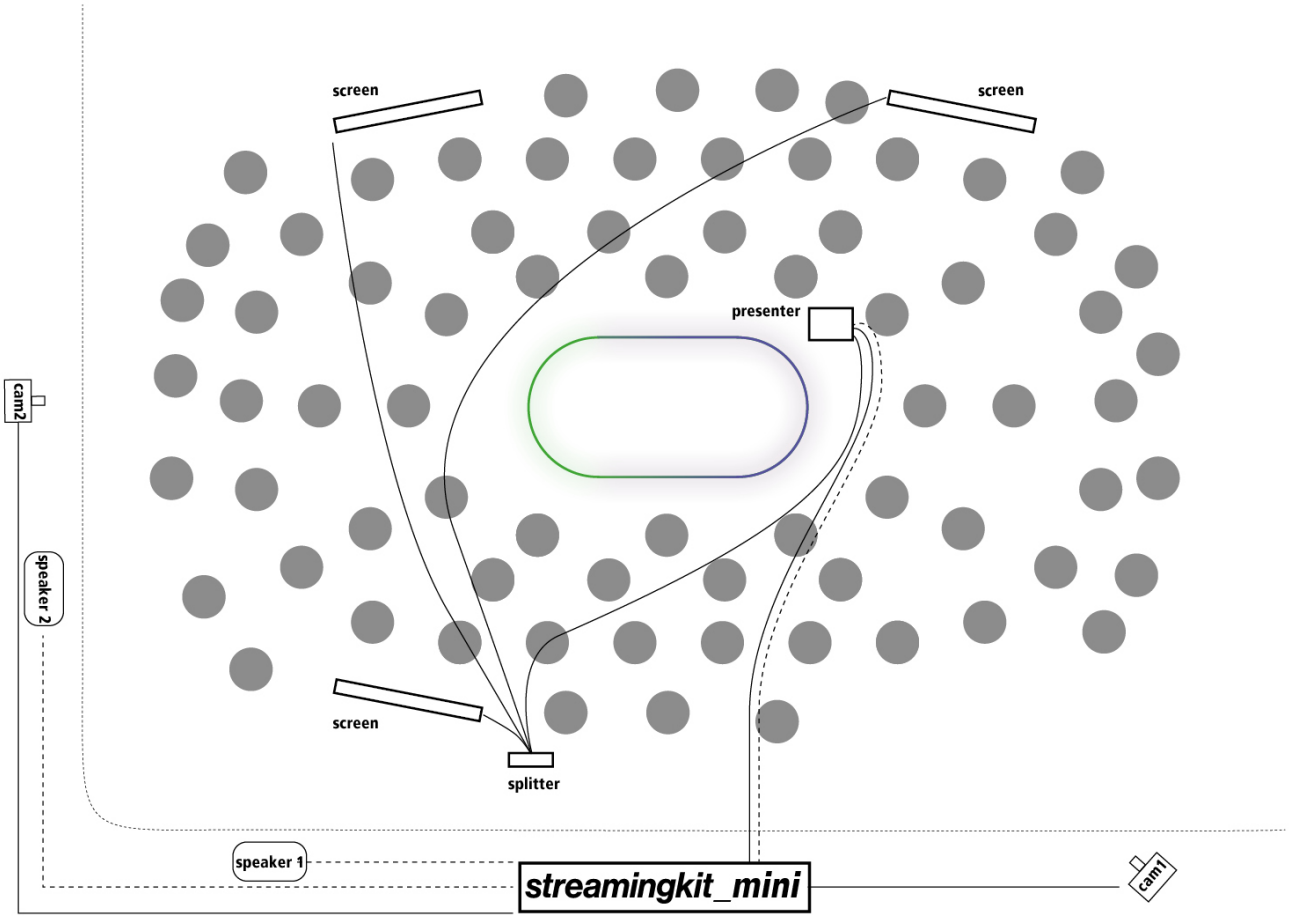
# LOOPS

Event Series
*Streaming as a daily university routine*

Hardware: streamingkit_mini
Software: OBS, stream.udk-berlin.de
Team (7) camera operator (2), production (1), moderation (2), setup and takedown (5-6)

LOOPS is a series of events dealing with current issues in society, art, science and technology. Lectures, workshops, and exploratory formats are offered to discuss interdisciplinary approaches. The events are technically supported and streamed by InKüLe. Previous guests have included Christa Sommerer, Laurent Mignonneau, Birgit Schneider, Klasse Klima, and Aram Bartholl. LOOPS is part of the Design&Computation program at the Technical University of Berlin and the University of the Arts and is funded by the Berlin University Alliance.
In order to enable a quick and smooth set-up and dismantling, clear processes and task distributions had to be coordinated, Discord served as a communication tool for this. A relocation of the stream upstairs into the gallery area provided, besides the practical advantages like the separation of audience and technology as well as fixed installed elements for the weekly use, also a good and rather extra-ordinary view for virtual spectators on the event itself. In addition, a light object was designed, which is additionally helpful for the visual identity formation and professionalization of the format through its striking visual design.
As a large curved loop in the room, it is also a scenographic object for participants to sit around, and which subtly conveys the speaking time for presenters through controllable and color-changing LED lighting.The streams were integrated into a custom-built website and can be accessed here.

Events with regular setup and execution require a lot of coordination and effort, especially in the early stages of the project. It is important to continuously log all learnings, constantly adjust processes and store all information centrally for all participants. In addition, such formats are ideally suited for knowledge transfer and the application of what has been learned with students or teachers, as it is possible to work directly and vividly on the basis of an event.



# **Scenarios:** hybrid

Please clarify if your scenario will be hybrid as soon as possible, as it includes specific spatial and technical implications.

## Hybrid (education) scenarios

A hybrid format is the combination of a live experience that takes place simultaneously on-site in presence and digitally, i.e. virtually. Guests or participants can actively take part in the event and interact.
The form of interaction and participation can vary greatly; in addition to the already mentioned integration via chat, video conferencing platforms such as Webex, Zoom or BigBlueButton are particularly suitable for exchange. There are also a variety of collaborative tools such as Miro or the collaborative live-coding platform hydra, which enable experimental and creative exchange and collaboration.
It is important never to think about the integration of virtual participants detached from the physical space and the participants on site, as it is about an intertwining of both worlds. This usually means more complex demands on the team, the technology, the spatial set-up, as well as the course of the event. Hybridity has many forms of play that are difficult to generalize and usually need to be clarified specifically, but simple approaches can also be found that enable hybrid exchange.
Below are some hybrid scenarios conducted by InKüLe and their respective learnings and application areas.

# Ars Electronica

hybrid exhibition tour
*sequence and choreography*

Hardware: streamingkit
Software: OBS, Cisco Webex
Team (4): camera operator (2), director (1), moderation/coordination (1)

The interdisciplinary Master's program Design and Computation, together with the New Media Class and the Generative Art / Computational Class of the Berlin University of the Arts, was invited by the Art University of Linz to use the exhibition space „Splace" at the main square in Linz for an event program within the framework of Ars Electronica 2022. InKüLe played a key role in developing the technical implementation of the multi-day exhibition formats, assisted with the organizational realization and was responsible for planning and implementing the hybrid accompanying program during Ars Electronica. This included live performances, concerts, conferences and hybrid exhibition tours.
Hybrid guided tours of the Design and Computation (D&C) students through the exhibition of their student work were realized within the framework of the ‚AG Online Lehre' of the UdK as well as in the course of the ‚Meisterkreis' - an exchange format between academic and industrial experts - by InKüLe. Besides interesting insights, the event opened up moments of exchange and reflection on the potentials of digital-hybrid art exhibitions.
When conducting hybrid exhibition tours, i.e. formats where both physical participants on site and virtual participants online are guided through an exhibition, there are some technical and organizational aspects that would need to be considered.

you can find the recordings of the performances and concerts here

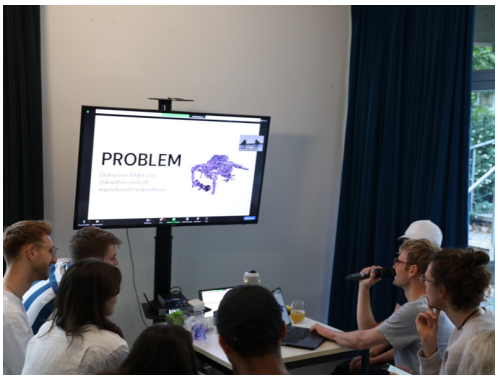
The audiovisual equipment used was the streaming-kit, including wireless microphones (rode wireless go ii), and 2 high-resolution cameras (blackmagic pocket 4k), and the audiovisual playback in the room was via screens and speakers distributed throughout the room. As the public tour took place during regular opening hours, good coordination and scheduling was elementary, as this was the only way to ensure that both the physical participants on site and the virtual participants could clearly see and hear the exhibition content. Here, test runs and arrangements were made before the actual event to ensure that everything worked smoothly. Communication between streaming directors, camera operators, presenters and speakers is crucial.
Good spatial choreography increases the professionalism of the broadcast both virtually and on location. For example, despite the movement through the room, lines of sight must be maintained in coordination with camera operators, presenters, moderators and the audience, or tripping hazards caused by the mobile cameras connected with HDMI and power must be avoided. Webex was used as the platform or software for the virtual component of the exhibition tour; the cameras and presentation content of the students were imported via OBS Virtual Camera.

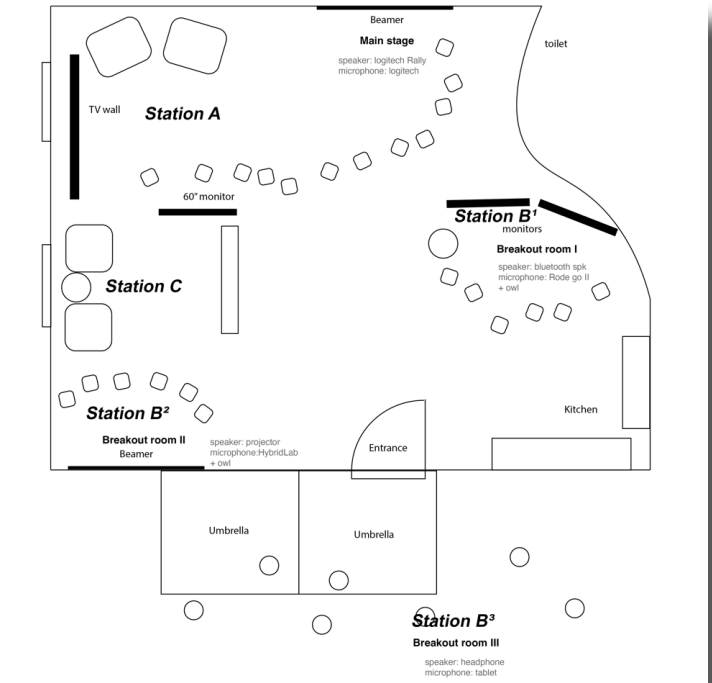
# focus.on.transformation

Conference
*multiple exchange in physical and virtual presence*

Hardware: conference systems (3), tablets (15)
Software: OBS, Cisco Webex
Team (7): direction (2),moderation/ co-ordination (2), coordination breakout (3)

FH Dortmund, TU / UdK Berlin, Bitkom, VDID and InKüLe examined together in the context of the New European Bauhaus Festival interdisciplinary topics of architecture, industrial design and digital design in a hybrid event that took place simultaneously in Berlin, Dortmund and Brussels. InKüLe designed and implemented various experimental and technical spatial situations to enable a simultaneous and hybrid exchange between teachers and students in Berlin and Dortmund. The interaction of the participants took place through conference systems as well as experimental interfaces through which live coding took place (Hydra Live Coding). In addition, there were discussions with invited guests about student projects as well as digitalization and the future of teaching in general. Afterwards, there was a free exchange and networking in hybrid breakout rooms. Numerous tablets were used for a mobile outdoor setup, high-performance projectors for interactive installations, various screens for the hybrid breakout rooms, and a video wall as the main stage and for panel discussions.




The challenge in executing the format was primarily the limited size of the space, due to the overlap and feedback caused by the breakout rooms taking place simultaneously on-site and digitally. This was solved by conducting several sound checks beforehand in which the various group workshops were simulated and then the microphones were fine-tuned accordingly. Moving one of the meeting rooms outdoors by using decentralized and mobile tablets also decongested the event. This required tests regarding the range of the WLAN connection as well as the implementation of a rental system for handing out tablets to participants.

# InKüLe Fachtag

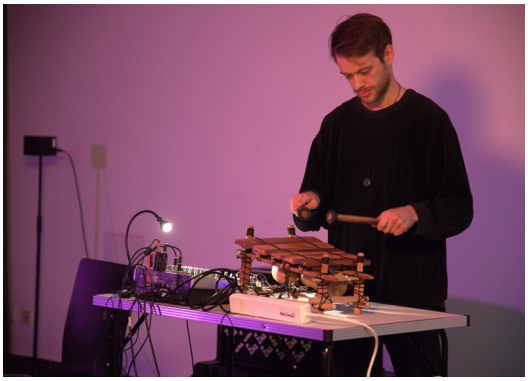
panel discussions and lectures
*integration of virtual speakers*

Hardware: streamingkit
Software: OBS, Cisco Webex
Team (4): camera operator (2), director (1), moderation/coordination (1)

The first transdisciplinary symposium of the third-party funded project Innovations for Artistic Teaching - InKüLe at the UdK gave insights into ongoing work processes and first project results under the motto arts / digital / scenarios. Emerging from the co-operation with individual courses of study at the UdK, exemplary teaching scenarios were presented and their didactic-technological applications and approaches to digital tools were reflected upon. The event and its formats (panel discussions, lectures and workshops) were realized using the Streamingkit as a stream with hybrid elements.

Panel discussions are particularly suitable as a hybrid scenario, but some important points have to be considered: An integration of the virtually connected person spatially into the seating group creates proximity. This can be achieved, for example, by a projection or a screen that shows the digital person in appropriate or original size.

It is also important to enable natural eye contact between the digital side and the on-site side. This becomes possible when the webcam and the digital person's transmission technology are in similar positions. An appropriate camera position makes it possible to support the flow of the conversation by allowing all participants to look at each other: To ensure that questions from the audience are clearly understood, it is important that the audio setup works detached from the conference systems. Additional high-quality mobile microphones enable interaction with the audience and digital guests. In order for the digital person to also share digital content, a separate system with a PC that is independent of the stream is required, as the content being shown in the room is independent of the person's broadcast.



you can find the recordings of the lectures and performances here

# FAQ

*The FAQ serves as a guideline for planning and implementing your own formats.*

### Which formats are part of my event?

Often there are several formats within an event. It is important to identify these from the outset so that you can then plan the framework conditions, as the type of format always interacts with the technical and spatial setup, as well as the general process and organization.Formats can be:

- Frontal formats and lectures
- Panel discussions
- Workshops
- Performances, concerts etc.
- Exhibition tours

### Is hybrid suitable for my project?

This is a very basic consideration that should be clarified before planning the event, as there are different requirements from just livestreaming.If you want to actively engage guests digitally (speaking), then it is a hybrid format. If you want to provide content live and make it available for posterity, it is a stream.

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### Where can I find further help with the implementation of my format?

You can find further help e.g. in the workbook of the joint project museum4punkt0 impulses & tools for digital cultural mediation from six years of cross-disciplinary mediation were brought together. The contents here can also be beneficial for hybrid projects in artistic teaching contexts.

### What audiovisual equipment do I need?

A basic audiovisual equipment consists of microphones, speakers, cameras and technologies for displaying images in space (projectors or screens). From InKüLe, we offer coordinated sets such as the streamingkit and streamingkit_mini for this purpose. In addition, conference systems such as the Logitech Rally or Meeting Owls are available for simplified use. Which technologies are best suited cannot be generalized and must be examined depending on the requirements of the scenario. However, our experience has shown that good sound is often more important than the transmission of image content.

**What should I look for when choosing video conferencing software?**
At the University of the Arts Berlin, there are several options of video conferencing tools such as Webex or Big Blue Button. Make sure that the platform offers an easy way to invite and log in participants. For inexperienced participants*, onboarding is recommended. For many hybrids, it is recommended to integrate the video conferencing software into OBS as a virtual camera.
Exhibition tours

**Are there technicians on site?**
It is advisable to involve the in-house technicians, as they are responsible for the basic technical implementation of the project. It is advisable to exchange contact details of the technicians in advance to ensure smooth communication and support during the event.

**Is there already existing technology on site?**
Check in advance whether existing technology in the room can be used. There may be cameras, projectors or audio equipment already installed that can be integrated into the setup. Find out how these devices work and are compatible to avoid potential problems during the event.

**What is the internet connection like?**
Stable internet connection: Make sure you have a reliable and stable internet connection. Test the connection speed in advance to ensure it meets the live streaming or video conferencing requirements. If your format is intended to be a mobile stream, mobile routers and sim cards with mobile data allow for flexible connection options. Also note that university often only have access to eduroam.

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**Is the space safe to leave already set up technology?**
Keep in mind that as semi-public spaces, colleges and universities are often targets for break-ins and theft. Make sure the space is adequately secured to protect already set up technology from theft. Also, clarify if there is any interim use of the space by third parties.

### Where to setup?

Cables are unavoidable and often shorter than expected. Always plan the technical setup based on power connections, cameras, audio equipment, etc. Most HDMI cables have limited video signal transmission, as weak or no image is received beyond a distance of approximately 15-20 meters. Cable bridges or taping the cables with adhesive tape prevent tripping hazards. It is also advisable to clearly label the cables for easy identification later. Cable ties or colored tape can be used for this purpose.

### How is the lighting in the room?

Ensure adequate lighting in the room to ensure that all individuals are well-visible. Avoid overly bright or dim lighting that could impair visibility. Also, consider changing daylight conditions; camera settings such as ISO, aperture, and shutter speed may need to be continuously adjusted.

### What are the tasks during the event?

It is important that workflows and task distribution are clearly communicated, and communication tools (udk spaces, Slack, Signal groups, Discord) are more suitable for quick and uncomplicated coordination than email. The number of people and task distribution during the event depends on the complexity and size of the event. Our conducted and prepared streams or hybrid formats can serve as a guideline. Generally, there are the following tasks and associated roles almost always:

- (Streaming) Director: The audio and video director oversees and controls audio and video technology during the event. This includes mixing and adjusting audio, switching between different camera perspectives, and overlaying graphics or presentations in the room as well as on the streaming portal.
- Camera Operator: Camera operators are responsible for setting up and maintaining technical equipment. They ensure that all cameras, microphones, projectors, and other devices function correctly. They also manage video and audio transmission and provide technical support during the event. If the spatial setting or the schedule changes frequently, it is recommended to have one operator per camera. Automated cameras like Meeting Owls do not require an operator.
- Moderator: The moderator leads and guides the event. They ensure that the schedule is followed, conduct discussions with participants, and interact with the digital and in-person audience. The moderator is responsible for the smooth execution of the event.
- Support Team: The support team is responsible for technical support for participants. They assist with setting up connections, answer questions, and resolve technical issues. They are also available for chat support and troubleshooting.

## What should be considered during test runs?

- Technical Setup: Ensure that all technical devices and connections work properly. Check the internet connection, audio and video setup, and the functionality of presentations or other digital content.
- Introduction to Technology and Processes: Introduce the people involved to the technology and processes during the event. Explain how to operate the devices used, the use of communication tools, and the planned event execution. A clearly communicated schedule displayed in the room can also be helpful.
- Sound Checks: Perform sound checks to ensure good audio quality for all participants. Test the microphones and their range, speakers, and any feedback limits to ensure clear and understandable audio transmission. Overall, high-quality audio transmission should be prioritized over video transmission.
- Onboarding and Preparation: Ensure that all participants are familiar with the tools and platforms used. Provide training or instructions to ensure that everyone knows how to log in, mute their microphones, and use other basic functions.

## How are graphic design and streaming related?

Graphic design and streaming are closely related as they influence the visual presentation and brand image during the broadcast. When graphic design and streaming are merged, a visually appealing and consistent broadcast can be created. This helps attract viewers' attention and promotes a positive perception of the stream. To ensure a cohesive appearance, elements such as logos, colors, and fonts can be integrated into the stream. It is important to prepare graphic content and templates in advance to ensure a smooth stream. Graphic elements can also be used to visualize information and provide viewers with better clarity and orientation.

## What about data protection?

Of course, it is important to consider the legal requirements of data protection and ensure that participants are informed about the processing of their data and give their consent. Usually, providing visible information in the room is sufficient. For further questions, please contact the data protection officer at UdK at ds@intra.udk-berlin.de.