

# Designing telematic creation spaces: Active Tele-Spaces

**Mario H. Valencia G., Elizabeth Granados Salgado**

Caldas university  
Manizales, Colombia

## Abstract

Active Tele-Spaces (TEA) project is the central theme of this presentation. Over the past decade, TEA has evolved as a collaborative space focused on exploring various realms of telematic design and creation within the performative and artistic domains. In essence, TEA investigates how the design of distributed interfaces, network technologies, and remote collaboration can be harnessed to create art in unique and diverse ways.

Throughout its years of development, TEA has brought together designers, artists, researchers, and creators from different disciplines. The aim has been to generate novel forms of design, art, and communication, thereby pushing the boundaries of creativity and collaboration.

A key facet of Tele Active Spaces is its emphasis on telepresence and collaborative work in the digital age. It has provided a platform for discussing and reflecting upon the challenges and opportunities that arise when design and artistic creation are mediated by modern technologies.

In addition to exploring new techniques and design methodologies, TEA has fostered interactions among individuals from various countries and cultures. This has led to the establishment of global networks of collaboration and knowledge exchange.

## Keywords

Telematic Performance, Telematic space design, Distributed interfaces, Computer-assisted collaborative work

## Introduction

Active Tele-Spaces (TEA) represents pioneering in the creation of telematic scenarios. Through broadband networks, artists and performers from different geographic locations converge in a common space, united by fluid connectivity. At the heart of TEA is the idea of linking creators through the design of fluid interfaces, physically distant but connected in real time with the help of data, audio and video.

The efficacy of this connectivity is based on very low latency times, allowing collaborative actions that defy geographical limitations. The goal is to promote the design of interactions that appear as natural and organic as if physical distance was just an illusion.

This approach seeks transparency in artistic collaboration, as Barbosa and Kaltenbrunner (2002) aptly describe. The aspiration is to eliminate physical barriers and dilute geographical disparities through the design of interfaces that allow the integration of distributed performative performances.

In the following segments of this presentation, we will delve into TEA's methodology in the creation of telematic spaces, the underlying technologies, and its potential to transform the world of artistic creation. The reader is invited to join this exploration towards telematics innovation, where new design possibilities join avant-garde visions, creating a canvas with no borders and a collaboration that transcends the limits of space.

## Providing Clarity to the Model

In the context of our analysis, it is vital to understand and explore the model that guides the configuration and operation of telematic actions. The technology driving this process is based on Computer-Supported Cooperative Work (CSCW) systems (Fig. 1) and resembles typical videoconferencing setups. However, it is important to note that simply simulating face-to-face interaction does not meet the needs of genuine telematic performance.

This is where the concept of "fidelity" comes into play, which goes beyond conventional telecommunication technologies and enters a paradigm that combines the emotional with the cognitive. This approach has been supported by studies such as those by Kirk, Rodden and Fraser in 2007. At the core of this concept is the ambition to design an artistic experience that goes beyond the simple reproduction of physical presence, creating something deeper and more resonant.



Figure 1. Collaborative work matrix Source: Developed by Elizabeth Granados, August, 2020.

The main goal is to create a space where participants, regardless of where they are, can come together in a state of distributed collaboration. In this space, the creative act and artistic communication must flow freely, without the limitations imposed by geographical barriers (Fig. 2). To achieve this, it is essential to design interfaces that go beyond the technical, establishing emotional and cognitive connections between participants. This will allow deep and genuine relationships to be forged, despite physical distance. To validate this hypothesis, we carried out the work Mirror. MirrorR proposes four scenarios: the creation of an extended score that recognizes latency in musical interpretation, exploring the listening and ensemble possibilities of the performers; the construction of a control and communication interface to integrate visualization elements that send images, sounds, and data in real-time; the establishment of a client-server system controlled by JackTrip to send and receive sound; and the scenic design of remote active spaces and the meeting place, considering the visual representation and placement of the performers, so that the audience and performers inhabit the active tele-space.

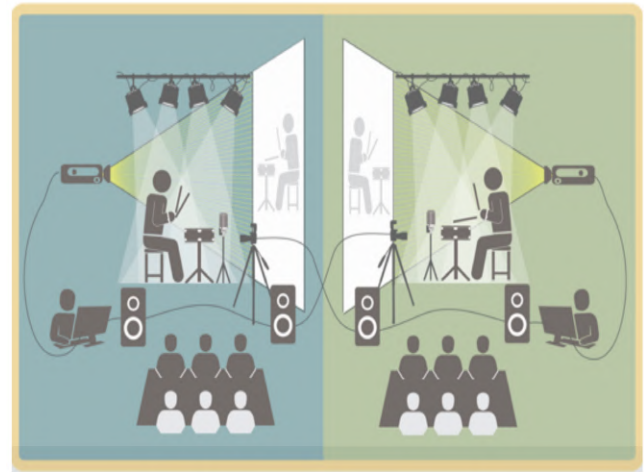


Figure 2. Stage layout Source: Own elaboration based on the stage layout for the staging of the play MirroR, June, 2017.

This approach is encapsulated in the concept of "active space", introduced by computational video art pioneer John Crawford. This term goes beyond the simple interaction between humans and machines; it focuses on collaborative co-existence and reciprocal influence between participants and the technologies involved. From this point of view, the construction of distributed interfaces is promoted to facilitate fluid collaboration and real-time role assignment, all while individuals are immersed in an expanded collaboration "landscape" (Fig. 3).

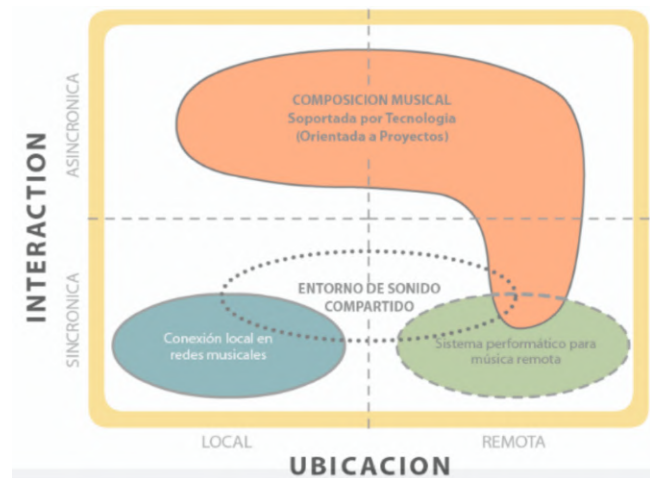


Figure 3. A classification space for computer-supported collaborative music Source: Developed by Elizabeth Granados, August, 2020.

One of the fundamental challenges in the creation of telematic spaces and in the search for what Roy Ascott described as the "telematic embrace" (Ascott, 2007), lies in the complexity of telematic performances and the construction

of spaces for sound and image creation on the network. This challenge arises from the multifaceted interaction of human and technical factors necessary to engage an audience. A key aspect is coordinating the presence of live performers on stage while incorporating images and sounds from remote locations. However, the concept of "place" in cyberspace is inherently illusory. As Michael Dertouzos noted: "We are not going anywhere, but the world of information is coming to us" (Dertouzos, 2002). In this context, telematic creation evokes a relationship of metaphors, similar to that of traversing space, as expressed by Paraguai and Prado (2001). This metaphorical movement does not require physical presence in movement; instead, it creates the illusion that the collaborators have been transferred to another place, overcoming the distance, as recreated in the work "Numbers, Patterns, Movements, and Being". This project was conceived for a telematic space and specifically explores different ways of navigating rhythm and groove in a space with some latency between sites. On stage, there are three local performers (piano, trombone, and flute) who interact with remote musicians (double bass and drums). The ensemble is achieved through the score, as there is no visual video feedback from the performers, leaving only the music and groove ideas as the unique dialogue between them. This allows for dialogues and silences, listening and interpretation, in a work that allows for the exploration of the expressive capabilities of the performers and the construction of the ensemble based on the feeling among them. (Fig. 4).



Figure 4. Image of the work "Numbers, Patterns, Movements and Being" - Michael Dessen - TEA3 International Image Festival 2016 Source: Own elaboration from the video of the TEA3 concert, May, 2016.

In contrast to the concept of "telematic transportation" represented by a display screen (either a monitor or a screen on a stage) (Fig. 5), the notion of transferability arises.



Figure 5. Image "Canción de mantas", Simón Castaño, telematic concert, MAMM, 2015 Source: Own elaboration from photographs of the "Canción de mantas" concert, April, 2015.

In this context, remote performers, enabled by technology, join and move on the local stage as if they were physically present, creating a tension between the body in motion and its representation decomposed and reassembled through the network. This tension intertwines the physical presence of the performer with the virtual domain, fusing the movement of the organic body with its electronic and digital representation.

## Artworks / Prototypes

Active Tele-Spaces (TEA) focuses on the development of performative prototypes that take advantage of the unique capabilities of telematic environments. The essence of our work is reflected in these meticulous designs, which span a diverse spectrum from immersive virtual reality experiences to online collaborations and the creation of interactive virtual installations.

These prototypes are not only creative works, but also representations of our effort to explore the limitless possibilities and challenges of online interaction.

Through significant contributions, TEA seeks to explore and shape an emerging field, focusing on creative and analytical aspects. The comprehensive vision that emerges highlights the importance of HCI, user-centered design, and international collaboration to create immersive and participatory experiences in virtual environments.

TEA, in its constant evolution, establishes itself as a creative laboratory without physical or conventional borders. The combination of cutting-edge technology, artistic vision, and active participation of the user/creator are the foundations on which the artworks are built. Beyond generating unique experiences, TEA contributes to the advancement of human and technological interaction in an increasingly digital and globalized world. It becomes a beacon of innovation, where the possibilities are endless and art is redefined in the context of collaboration, technology, and creativity.

At this intersection between design, art and technology, prototypes designed specifically for telematic environments are not mere experiments; They are bold vehicles that explore online interaction and digital collaboration. Its goal is to capitalize on the unique characteristics of telematics environments to create experiences that challenge the limits of creativity.

One of these innovative approaches is the use of VR as a basis for performances (Fig. 6). This technology allows the creation of immersive experiences, where participants can interact with three-dimensional environments. The possibilities are extensive, encompassing live performances, dance, music, and interactive installations, providing a limitless canvas for artistic experimentation. In "Caminandar," two performers, one local and one remote, come together

through the musical dialogue they create with the feedback from their instruments and the soundscape they hear through their virtual reality headsets. Each performer is connected with VR goggles and from there, even though they don't physically see each other, they view the same everyday images of the Pacific framed by the sea and the magical environment of La Plata Island. In this context, a marimba player and a guitarist start an improvised dialogue that is framed within their personal perceptions of the immersive scene proposed.



Figure 6. Image of the work "Caminandar", FII, 2017, TEA VI Source: Own elaboration based on the work "Caminandar", June, 2017.

Another significant approach is live streaming, which acts as a powerful bridge between artists and audiences. Through streaming platforms, artists can share their performances from dispersed locations, offering an interactive window for viewers. Real-time participation through chats, questions and answers, and even manipulation of on-screen elements reduces physical distance and strengthens the connection between participants. This symbiosis reflects a true globalization of artistic creation, creating a shared experience despite geographic borders. As explored in "Estertor," the piece is a live interaction that responds and improvises based on the involuntary sounds produced by breathing. If breathing is a symbol of pause, rest, silence, and stillness, "estertor" represents disturbance, interruption, the unwanted, but also the audible mark of being alive. (Fig. 7).

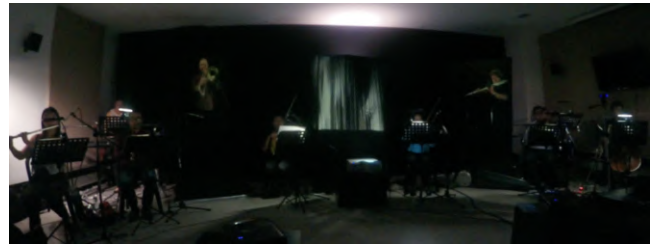


Figure 7. Images of the work of estertor TEA6, Juan Rubio Source: Own elaboration based on video of the work, April, 2019.

In this environment, artistic narrative merges with the digital environment, allowing unprecedented communication and cooperation. Technology serves as a bridge, connecting artists who would otherwise be separated, and enabling the creation of an intercontinental symphony of creativity. Geographic boundaries dissolve, and a global community of artists is formed, united by their passion and skills, and empowered by the connectivity offered by modern digital media, as proposed in "Tele four6," it is a telematic interpretation based on John Cage's work "Four6." This performance takes place from four different cities in Brazil and Colombia. Each city acts as an interpreter, following a score that dictates the entrances and exits of sounds. The piece promotes collaboration and dialogue among the performers, who organize and rehearse together to create a unique ensemble. (Fig. 8).

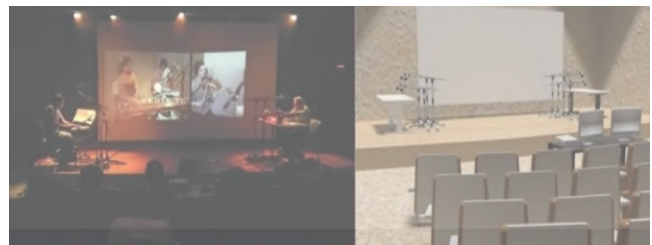


Figure 8. Tele-Four6 concert at the Ático center, Bogotá, 2013 Source: Own elaboration based on a photograph of the concert and 3D model of the stage, August, 2013.

Online interactive installations are a form of art that combines visual, auditory, and tactile elements in cyberspace, allowing viewers to influence and actively participate in the artistic experience. Through these interfaces, viewers can take control of aspects such as lighting, sound, or visual elements, becoming active participants.

The horizons of this approach expand further towards performances based on data and algorithms. In these works, data collected from various sources can be used to influence or even determine aspects of the performance. For example, real-time data on weather, traffic, social media, among others, can be processed and translated into visual and sound patterns. Algorithms can be used to create compositions that

evolve and respond to changing conditions and stimuli. As proposed in "Membrana Telemática" (fig 9) an exploratory project in which the constant blending of sound layers, visual elements, and links creates a connection that weaves a space where the virtual is constantly updated with the interactions generated by each network actor from different cities such as Portugal, Barcelona, Buenaventura, and Manizales.



Figure 9. Images of the installation "Membrana telemática", Mario Valencia, Heitor Arvelos, Christian Lizaralde, Carlos Gómez Source: Own elaboration based on the installation "Membrana telemática", April, 2015.

## Networks and Contributions



The prototypes of the Active Tele-Spaces (TEA) project are not isolated products. They are born from collaboration with universities and cultural centers around the world, including prestigious institutions such as the university of Chile, California, Stanford, among others. These collaborations, along

with local participation, have led to the creation of more than 60 works and prototypes in the 11 years of the event.

The TEA project has been a vital part of the International Image Festival for more than a decade, but its impact goes further. Its presentation at international events has allowed us to show its progress to the academic community and expose it to critical analysis. Meetings such as the Academic Design Forum, Arts-electronica, and ISEA have served as scenarios where TEA prototypes have demonstrated their validity, redefining the panorama of telematic creation.

In these meetings, the confluence of art and technology has shown its ability to overcome geographical and disciplinary limits, uniting diverse people in a collaborative ecosystem full of innovation. These events have not only validated TEA's work, but have fueled a rich dialogue about the possibilities and challenges at the intersection of art and technology.

This international cooperation highlights the importance of interdisciplinary collaboration and integration in our modern era, and how creativity can thrive when diverse talents come together. The event has acted as a catalyst in the advancement of telematic spaces, contributing to the progress of global society.

## Conclusions

Among the main conclusions that have been found in the course and development of TEA are:

**International Collaboration:** The Active Tele-Spaces (TEA) project and the various telematics initiatives described illustrate the power of international collaboration and technology to transcend geographic and disciplinary boundaries. The union of universities, cultural centers and international events has facilitated a network of innovation that has resulted in more than 60 works and prototypes, establishing a new era in performative and artistic creativity.

**Convergence of Art and Technology:** Prototyping based on real-time data, online interaction in performances, and active audience participation in interactive installations are examples of the growing role of technology in art. This convergence has not only redefined the artistic landscape, but has also opened a rich and constructive dialogue about the possibilities and challenges of fusing art and technology.

**Cultural and Academic Impact:** The presentation of TEA and related innovations at multiple international events has strengthened the field of telematic spaces and has contributed significantly to global society. The validation and exhibition of these works not only reflect technical and creative skill, but also serve as a call to reflect on how collaboration and innovation can shape new forms of expression and understanding in an interconnected world.

Telematics environments, as demonstrated by TEA and similar projects, offer new forms of interaction with art and technology, leading to heightened emotional responses and expanded cognitive perspectives.

## References

- Ascott, R. (2007). *Telematic Embrace: Visionary Theories of Art, Technology, and Consciousness*. (E. A. Shanken, Ed.) [versión Adobe Digital Editions]. Recuperado de <https://zaklynsky.files.wordpress.com/2013/10/telematic-embrace-visionary-theories-of-art-technology-and-consciousness-by-roy-ascott.pdf>
- Barbosa, Á., & Kaltenbrunner, M. (2002). Public Sound Objects: A Shared Musical Space on the Web. Recuperado de <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.18.6353&rep=rep1&type=pdf>
- Crawford, J. (2005). Active space: embodied media in performance. En B. Juan (Ed.) *SIGGRAPH '05 ACM SIGGRAPH*. Article No. 111. 18. Los Angeles: ACM Publisher.
- Kirk, D., Rodden, T., & Fraser, D. (2007). Turn It This Way: Grounding collaborative action with remote gestures. Recuperado de <https://pdfs.semanticscholar.org/2ee5/53a80c6ace95b05d288471e4bbff30ee41fd.pdf>
- Dertouzos, M. L. (2002). *The unfinished revolution: human-centered computers and what they can do for us*. HarperBusiness.
- Paraguai, P., & Prado, G. (2001). Processos telemáticos e metodologias de pesquisa artística. *Anais do XX Encontro da ANPAP*, 2, 483-493.