Project report TNA: Research on creation of remote live dance performances using immersive environments. CORDP-CAVE

- Project start and end date: June 2nd – June 13th, 2014

Motivation: This TNA focused on a research line that Kòniclab is developing, exploring new forms of interactive artistic expressions, aimed to new audiences. Audiences that might not go to the theatre to see a dance or theatre performance, but who still want to consume 'live' arts. New forms of reaching these audiences need to be explored.
As an extension, exploring the articulation between body and digital data, the embodiment of live performance into mixed reality and immersive environment, and defining ways for this immersed body to be transmitted and distributed over high speed networks. Exploring the possibilities of shared immersive experience between performers and audience.

Challenges: At technical and artistic level, this project proposed several challenges:

- Study about the creation of interactive 3D visual contents using a CAVE for artistic purposes.
- Research and experimentation of software and hardware methods that will allow remote visualization of the contents created in the CAVE using Ultragrid and broadband networks. Exploring multiple configurations (different perspectives, camera configurations, number of dancer/performers, etc.) and evaluation of the whole system: CAVE, artist, audience
- Research on remote controlled live realization of the video streams.

Workflow: The first two days were dedicated to an initial setup of the system at the Fraunhofer IPK virtual reality laboratory. The setup consisted of an CAVE, a VR software to generate dynamic geometries based on the users input, an optical tracking system and four tracking targets which were attached to the dancers head and hands. Furthermore, three video cameras placed in different positions and the network software and hardware to transmit the images of these cameras at High Definition resolution, several scenarios were setup over the following days of the process. Dance compositions were developed in iterative manner, exploring the interactive and graphic possibilities offered by the system, with the collaboration of Fraunhofer personal. Working with a flow of visual 3D elements away or towards the performer is proposed. Network connection is established between IPK and I2Cat and the three cameras are remotely controlled in order to do the live editing. Experiments are conducted mapping various parameters of the dancer's movements to the form generation, e.g. hand distance to object size (scale), generating lines or textured surfaces, changing the viewers perspective, mixing various form generations simultaneously. Dance and visual explorations are developed interactively, and on the last day a 45 minutes performance is offered to a small audience at IPK and in connection with Barcelona.

Future Directions: This project allowed us to evaluate the possible future application of this or similar setup. As broadband internet is becoming more accessible, a new field of artistic possibilities is emerging, somewhere between live performance and television broadcast. Possible future setup would implement the transmission of the 3D environment rather than 2D video images, to keep the immersive experience, but tis will require another type of transmission technology.