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WHOLODANCE

Whole-Body Interaction Learning for Dance Education

WHOLE-BODY INTERACTION LEARNING FOR DANCE EDUCATION

FOREWORD

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Welcome to the first annual newsletter of the WhoLoDancE (Whole-body interaction Learning for Dance Education) project, which provides an overview of the accomplishments made within the 1st year. Since the kick-off meeting in January 2016, WhoLoDancE has already come a long way, with achievements that are beyond the expected outcomes of the first year. This is thanks to hard work and the great enthusiasm and motivation shown by the WhoLoDancE partners, which made it possible to merge two completely different worlds, the world of dance and the world of technology. Both dance and tech partners invested enormous energy in overcoming all communication barriers and finding common ground between Art and Science. At the same time the WhoLoDancE management team played a key role in providing the right conditions for fruitful exchanges among the partners by organising and coordinating frequent physical meetings and teleconferences. Despite internal communication, the consortium has also been very active in outreach. Within the first year WhoLoDancE was presented in eleven different conferences, including MOCO 2016, during which we organised and coordinated a successful workshop that was dedicated exclusively to the content of WhoLoDancE. While we have much challenging, demanding work lying ahead, I am confident that through its ground-breaking research and development activities WhoLoDancE will creatively transform the landscape of IT and dance research and open the way to new exciting developments.

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Project overview

CONSORTIUM

- Athena RC
- Coventry University (CovUni)
- Istituto Stocos
- K.Danse
- Lykeion ton Hellinidon – Lyceum Club of Greek Women (LCGW)
- Motek Entertainment
- Peachnote GmbH
- Politecnico di Milano (PoliMi)
- University of Genova (UniGe)

WhoLoDancE aims at developing and applying breakthrough technological tools that will assist dance teachers, students, choreographers, professional dancers and researchers in their desktop and dance-studio work, stimulating their innovative thinking and creativity. The main objectives of the project and their expected impacts are summarised below:

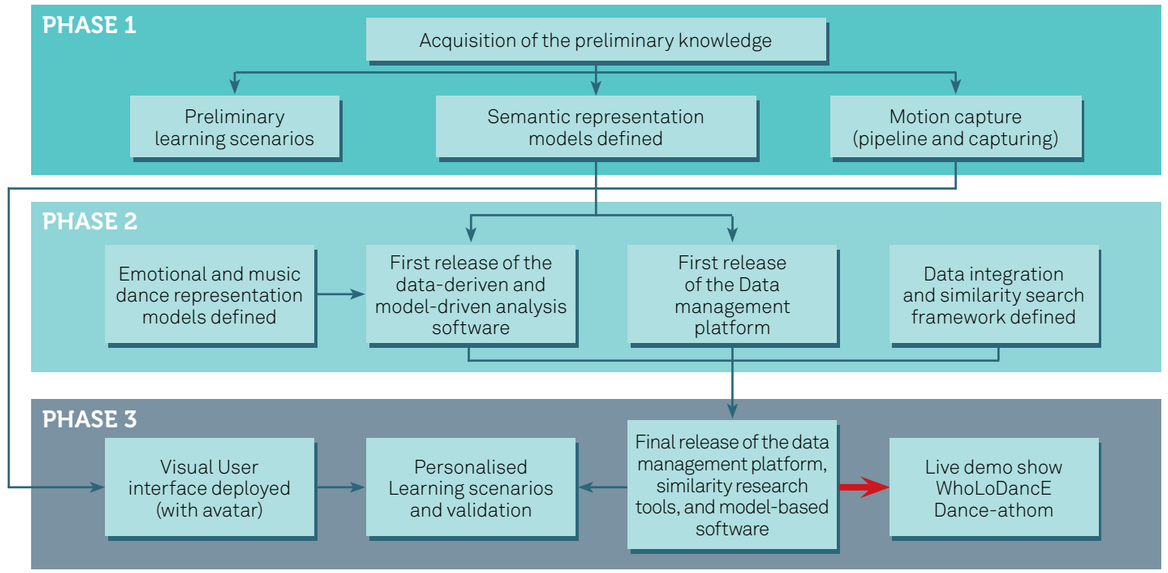
1. **Develop a large library of dance movements** based on data acquired through motion capture (mocap) sessions and annotated in a manner that allows data interpolations, extrapolations and synthesis, making it possible to preserve cultural heritage, and in the long-term creatively enrich it.

2. **Develop a 'blending machine'**, a powerful tool that will allow choreographers and dance teachers to blend and assemble an infinite number of dance motions from the library of movements, stimulating the development of novel choreographic methods.

3. **Automate the analysis of expressivity and movement qualities in non-verbal dance data** by applying similarity search tools and techniques for emotional content analysis, opting to facilitate the investigation of principles, vocabularies, mental imagery and simulation connected to dance practises, and stimulate the development of new research domains.

4. **Develop life-size volumetric displays (avatars)** of dance masters' motions that will enable dancers to self-assess their own body alignment and technique by comparison, stimulating the development of novel teaching and learning methods.

5. **Widen the access and practice of dance** by providing access to the created dance database through commercially available consumer grade motion capture devices like the MS Kinect, Intel's real sense and others.



^ WhoLoDancE work plan

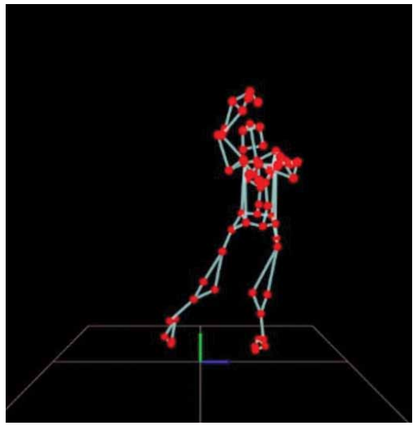
In order to achieve these objectives, a work plan was developed that organises the project in three phases.

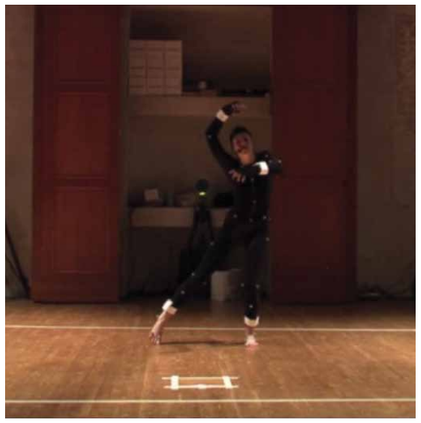
The first phase that ran from January till December 2016 dealt with the acquisition of the preliminary knowledge coming from the end-users, thus making it possible to have a first definition of the learning scenarios (preliminarily evaluated by the end-users), as well as a definition of the different users' profiles. At the same time, an embryonic definition of the semantic representation models was deployed. Finally, the pipeline for the motion capture process was developed and the data acquisition stage of the capture was completed. At the end of this phase, the first Milestone was reached (Milestone 1 – Preliminary definitions and ground-truth data acquisition).

The second phase will lead to the definition of the emotional representation and music-dance representation models, as well as to the preliminary deployment of data-driven and model-driven analysis software (with relevant libraries defined). Furthermore, the data management platform will be released and tested in its alpha version, and the data integration and similarity search framework will also be defined. At the end of this phase, a functioning mock-up graphical user interface will be demonstrated. The Second Milestone will be reached (Milestone 2 – Models platform and similarity search basic development).

The third and final phase of the project will mainly deal with the deployment of the software and hardware adaptation needed for the deployment of the visual and interactive user interface (with the multimodal avatar). The mock-up GUI built on the second phase will be finalised. The interface will be subsequently validated through learning experience scenarios completed on-purpose. Furthermore, during this phase, the different systems (data management platform, similarity search tools, model-based software, with final libraries) will be delivered. Finally, the WhoLoDancE Dance-athon will be organised to disseminate the project results in a public event, conceived of as an artistic performance and demo-live show of the system. At the end of this phase, the Third Milestone will be reached (Milestone 3 – Visual User interface and data-driven models, tools and platform deployed – learning scenarios validated – final dissemination event for public outreach).

Motion capture sessions: building up the library of movements





< Real-time avatar visualization

^ Marianne Masson (K.Danse) performing contemporary dance during motion capture in Casa Paganini in Genova

One of the top priorities during the first year of WhoLoDancE was to populate the library of movements with a substantial volume of kinetic material representative of all the dance genres that the project focuses on (ballet, contemporary, flamenco and folk Greek). The possession of such data is not only necessary for the utility of the library of movements as a final product, but also for testing and validating the functionalities of the most advanced tools that the project is expected to provide, such the blending machine, the volumetric displays and the similarity search tools. In order to collect this data, three motion capture sessions were executed. The first one took place in the monumental premises of the Casa Paganini InfoMus research centre of the University of Genova in March. This was an experimental session that focused on capturing movement qualities, i.e. expressive aspects such as origin of movement, fluidity, coordination, light vs weighty movement etc. Only contemporary dance movements were recorded, because they are deemed more open to experimentation and exploration of different qualities of movement than the rest of the dance genres in the project. Considering that music can impose specific movement qualities that may have contradicted the aspects that were showcased in every take, it was decided to perform the recordings without music. The recordings were executed using the so-called EyesWeb XMI platform that the UniGe team developed. This integrates a Qualisys motion capture system (www.qualisys.com) with a number of accelerometers, RGB and RGBD video cameras, smartphones, microphones, and biometric sensors, for recordings of movements, gestures, audio, video, and physiology. EyesWeb enables synchronized recording, analysis, and playback of data.

The two following sessions took place in Amsterdam at the Motek Entertainment studio in May and the Schram Studios in July. These are innovative 3D animation production studios, specializing in services for feature films, commercials, television series, games, digital and mobile media, whose significant experience in commercial work, enabled a great volume of recordings representative of the four dance genres of WhoLoDancE. During these sessions a multi-system setup was available, with a large capture volume, up to 25 x 25 metres. The recordings were executed using the passive optical motion capture system, with a VICON T160 camera based system (www.vicon.com). During the Amsterdam sessions more than 18 hours of 3D data were captured, piling up to 1875 raw sequences of data, which, after partial segmentation, provided about 4000 usable data ‘blocks’.

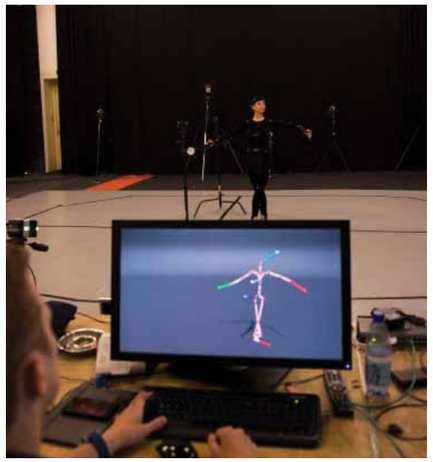
^ Capturing folk Greek dances and contemporary in the studio of Motek Entertainment in Amsterdam

^ Capturing flamenco in the studio of Motek Entertainment in Amsterdam

^ WhoLoDancE partners during the motion capture session at Motek

To achieve the intended result without facing major interoperability issues, the use of a unified methodology of capturing in all sessions was critical. Potential compatibility problems during merging and processing of the data needed to be solved before the pre-production starts. To address those problems, the capture sites established a unified marker set template and used a unified naming convention and a common file naming and conversion scheme. The challenge that the consortium is facing at the moment is to achieve a most suitable segmentation and annotation of the acquired data for the purposes of WhoLoDancE.

^ Jean-Marc Matos (K.Danse) and Amalia Markatzi (LCGW) giving instructions to their dancers



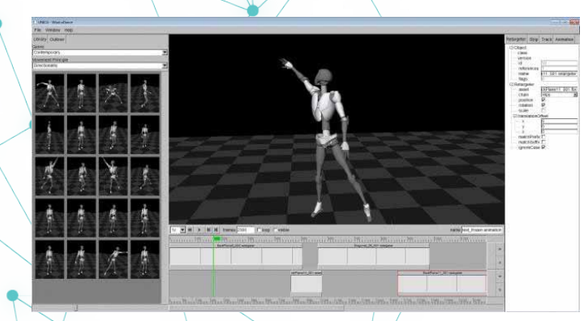
^ Real-time avatar visualizations

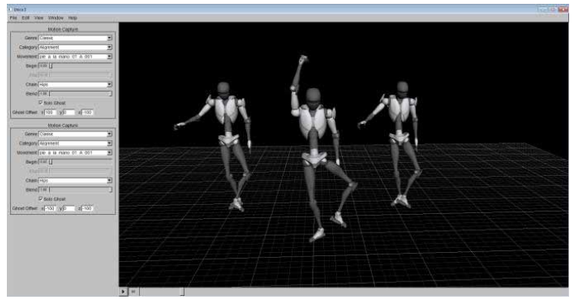
A running prototype of the blending machine

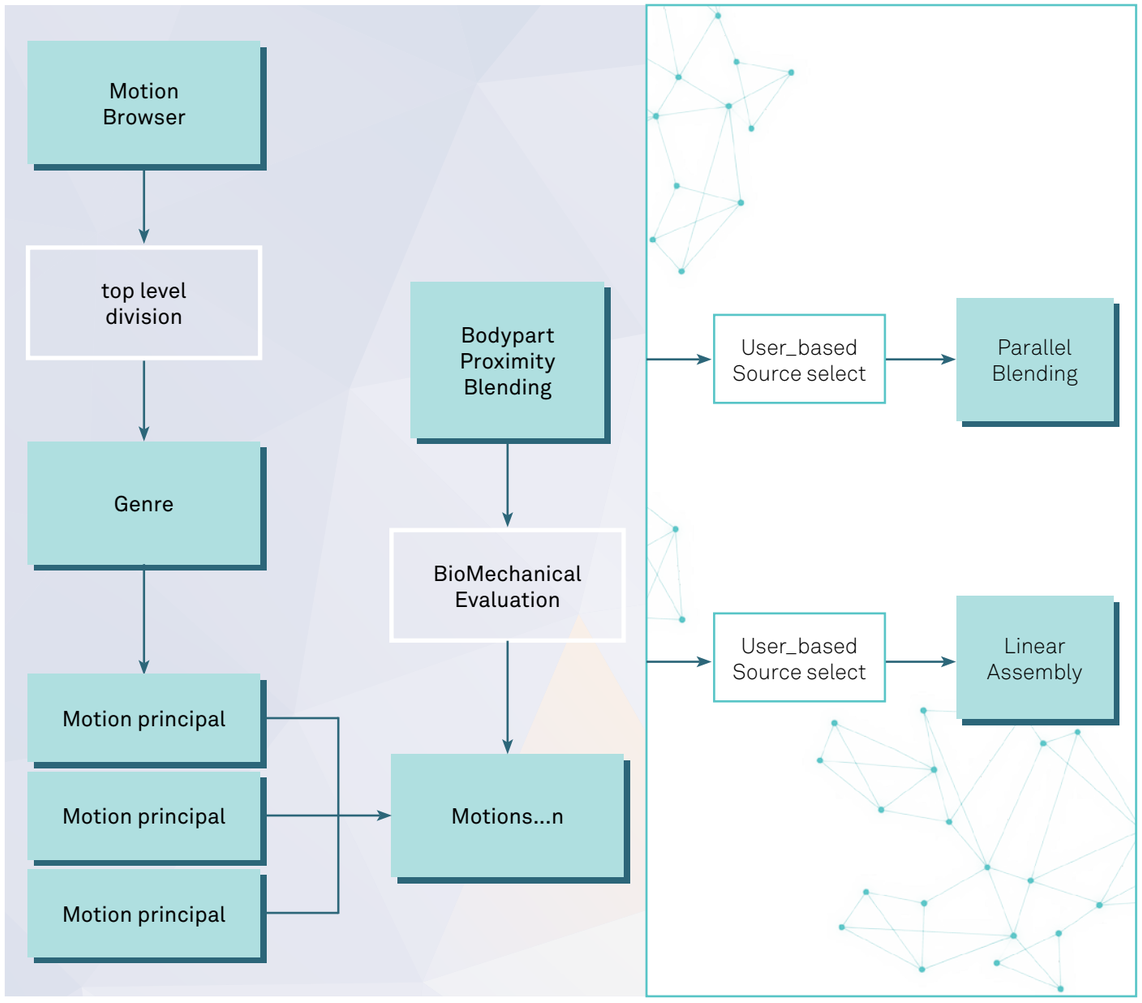
An impressive achievement made within the first year of WhoLoDancE is the development of a running prototype of the blending machine by Motek. The basic function of the software is the interactive blending and composition of sequences of movements based on the mocap data that are already available in the library of movements. The sequences are not only assembled in a linear setup, where the combined movement segments appear in their original form, i.e. identical to the segments in the repository of movements, but also a parallel blending is possible, where the consecutive segments are a superposition of segments from the repository. This means that the blending machine allows the users create new movements based on the ones that are already available. It could for instance combine the lower body of a flamenco segment with the upper body of a traditional Greek dance segment and head motions from ballet. This provides a unique possibility for exploration of infinite movements. The model is broken down by body part (i.e. head, shoulders, hands, feet, etc.). Within each body part a further breakdown can be accomplished. One of the technical issues in this approach

v **Left:** Input interface of the blending machine prototype

> **Right:** Output interface of the blending machine prototype







^ Logical diagram of the blending algorithm

is that the model in its current form does not fully take into account the biomechanical limits of the human body. This effectively means that a blending could lead to a sequence of movements that are technically impossible for humans. The tech partners of the project are currently working on solving this issue. Another interesting feature of the blending machine is that it allows to group and view segments based on the movement qualities/principles that have been assigned to them during annotation. This can be of great assistance to the end users during choreographic composition.

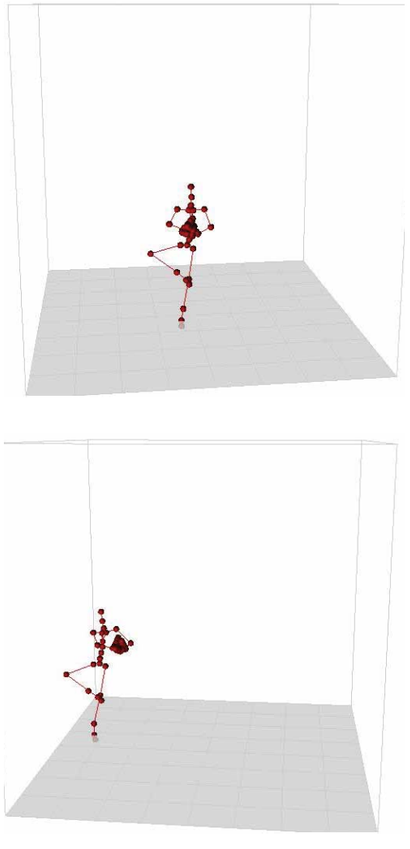
The WhoLoDancE blending machine is part of a Motek development of a generic graphic engine for motion capture data called UNICA3.

The functionalities available in the running prototype of the blending machine are briefly presented in the table below:

TABLE 2
Functionalities of the blending machine prototype

NEW	Select this option to start a new blend.
OPEN	Allows you to open a previously saved blending session from your hard drive.
SAVE	Saves your current blending session to the hard drive. If a file name has not been previously defined, then you will be prompted for a new file name.
SAVE AS	Saves your current blending session to the hard drive. You may select a pre-existing file name or create a new name for this session.
PLAY CONTROL PROPERTIES	This option allows you to customize your configuration to help optimize your blending experience. You are able to play forward, backword, pause, Jog and shuttle through the timeline
VIEWING AREA	The Viewing area (located in the left-hand side) is the area where you can change general UNICA3 display settings. The menu breakdown is as follows:
VIEWER PLAY CONTROLS	The Viewer play controls (located below the Viewing area) allow you to play, pause or stop a blending loop. This is useful if a single frame is to be focused on during the blending process.
FRAME SLIDER	The Frame Slider (located to the right of the Viewer play controls) shows the frame id currently being viewed in the Viewing area. Frames can be individually selected by simply dragging this slider to the left or right.
TOTAL FRAME COUNT	The Total Frame Count (located to the right of the Frame Slider) shows the total number of frames in this blending sequence. The number shown here will vary depending on the sequence that is being blended.
BROWSING SOURCES	By clicking on any of the "Source List Icons" you are requesting from the server to add the selected source to the display list. If you have already a source open (default head source) you will see a blend between the default and the new selected source. To view sources without any blending make sure that you are viewing one source only. (i.e. remove the default source first.)
STATUS BAR	The status bar provides process information to the animator. Such items displayed here are: number of frames received from the UNICA3 repository, starting file paths, etc.
BLENDING AREA	How does one make changes to the data in the blending process? This is done using sliders and blend types in the Blending area. You may change the values of each characteristic by clicking or dragging on the associated slider bar. As you do so, notice that the numerical value to the right adjusts accordingly. The lock checkbox, to the right of the slider and value display, holds the value of the slider. This is useful when you do not want this value to be modified by any of the other characteristic value changes.
BLENDING TYPES	The blending type controls the amount of "leakage" of motion from the active (currently under editing) body part, to the rest of the body. Since all the sources are made from full body motion capture sequences, the amount and the path of the leakage will create different blends. By clicking on the leakage icon of the particular item that you want to modify, a pop-up window of leakage blend types appears. Simply click on the desired type to select.

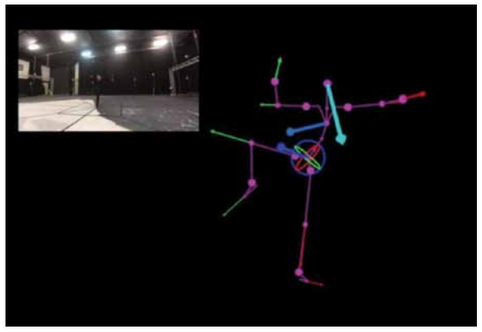
Similarity search across a multimodal data repository

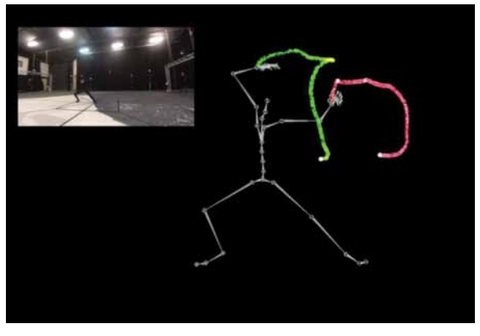


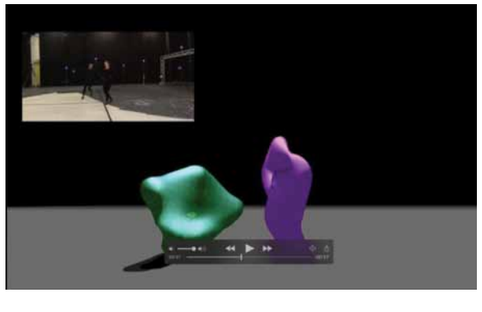
^ Graphical representation of geometrically similar movements detected by the similarity search tool

Similarity search is an essential tool for automating the analysis of movement qualities along non-verbal dance data, which is one of the main goals of WhoLoDancE. Within the first year of the project the partners Peachnote GmbH and PoliMi have been busy with research and development in this area. Having a significant experience in developing similarity search tools for music Peachnote GmbH focused on identifying those elements in the music algorithms that can be transferred in the domain of dance and the modifications that they need to undergo in order to fit the purposes of WhoLoDancE. The preliminary results have been very encouraging. An exploratory web-based interface has been created in collaboration with PoliMi that allows to evaluate the algorithm performance: the similarity engine has identified pairs of similar motion sequences and using the interface one can see that the identified sequences are indeed similar. The prototype has been helpful for demonstrating to all partners the working principle behind the similarity search, which made it easier to discuss the further improvements and extensions of the similarity engine, such as e.g. the inclusion of high-level features that UniGe and PoliMi are able to compute from the raw motion data. For example, one should be able to search for motion sequences in which the lower body movements and the overall motion fluidity are similar to the query. The discussion has also helped to specify in full detail the next step in the similarity engine development - a standalone service that the partners designing the high level feature extractors and the user interface will rely upon. The implementation of this service is taking place now and the first version of the service should go into operation by July 2017.

Towards virtual and holographic dance learning experiences

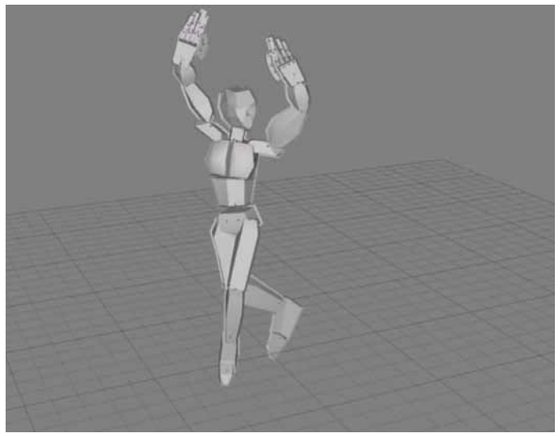






Taking into account the complexity and diversity of dance practices and the fact that recent dance teaching best practices go far beyond the mimesis of kinetic sequences, WhoLoDancE investigates a variety of multimodal interaction environments which can support both self-reflection on one's movement and generation of new kinetic material. A volumetric projection or an augmented reality visualization tool can be of great value, as it will enable both dancers and choreographers to get real-time, 3D access to the recorded material in an immersive and innovative way, opening new horizons in their practise and giving plenty of space for creative exploration in teaching and choreography. Hence one of the main outcomes of the project is the implementation of dance learning virtual experiences were the virtual teacher's movement appears as a real size holographic volumetric space. In this context a variety of motion visualizations are investigated by WhoLoDancE either for desktop work or for holographic experiences, offering the end users ample tools for practicing movement qualities and geometry of movements, and stimulating their creativity. Some of these visualizations are presented in the figures on the left.

IMAGES FROM TOP:
> Desktop visualisation with arrows
> Desktop visualisation with trails
> Desktop visualisation with volumes



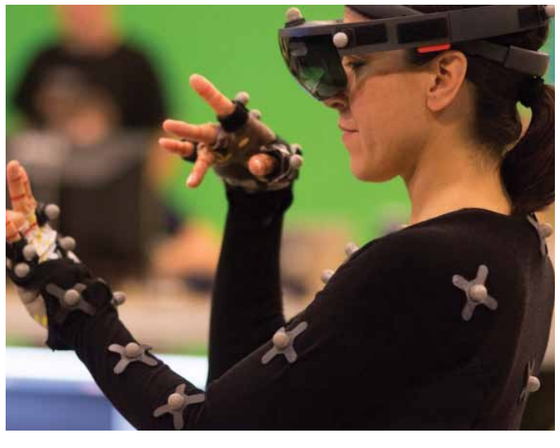
^ Experimental 3D models

WhoLoDancE aims at delivering user experience by either achieving a proper volumetric 3D display or suing current state of the art holographic and augmented reality visualization devices available today. A device that is currently being integrated is the Microsoft HoloLens as a visualization tool in a Motion Capture/Dance/Visual Effects production. Streaming realtime data from Autodesk's MotionBuilder wirelessly to the headset, allows dancers & choreographers to see live-size holograms in their physical capture volume. Everything can run live but playback from file is also possible. There is always full control from the operator running the visualization in parallel on the workstation. The WhoLoDancE partners had the opportunity to experiment with the HoloLens during the second motion capture session in Amsterdam in July.

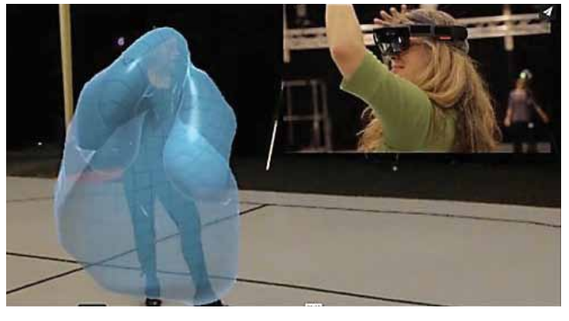
The dancers who saw their own body motions in the form of avatars reported it as an exciting and insightful experience. The HoloLens view allowed them see details in their motions that increased consciousness about their own movements.

It is estimated several new devices will appear during 2017 and 2018 that may enhance further the visualization needs. The challenge for the WhoLoDancE consortium will be to find an appropriate format for integrating those 3D visualisation devices in the learning scenarios.

^ Hololens view of Muriel Romero (Stocos) dancing contemporary with her own avatar



^ Rosa Cisneros (CovUni) and Muriel Romero (Stocos) experimenting with the hololens



^ HoloLens view of Rosamaria Cisneros (CovUni) dancing flamenco

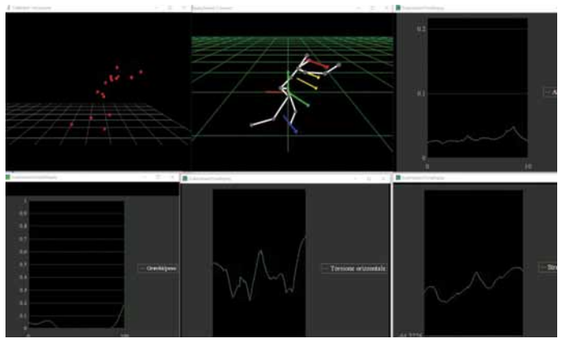
< Jasper Brekelmans (top) and Oshri-Even Zohan (bottom) from Motek modifying the settings of the HoloLens

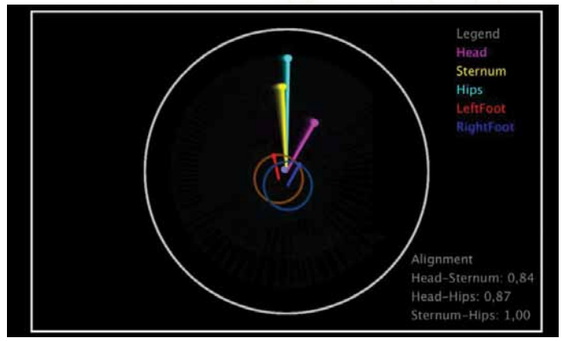
Low-end motion capture tools and "movement sketching„

Within the first year of WhoLoDancE the tech partners contemplated various low-end motion capture tools that can be used for teaching and learning purposes. Based on feedback provided by the dance partners, two of them were further developed.

The first one is a software prototype of a teaching tool based on the Laban's "Cube", which has already been implemented in the EyesWeb platform by UniGe. This tool measures the direction of three body parts (arms, trunk and head) and visualises in real-time the dancer's orientation. The teacher can define the setup for the exercise, in terms of the visualization of a sequence and timing of a number of points in the Cube (possibly random) and which part of the body should be used (e.g., left or right forearm, head). Then, once defined the details of the exercise, the sequence is presented to the student dancer who has to reach the points with the selected part of the body.

A second prototype has been developed based on a downscaled version of the "postural tension" movement features developed by UniGe. The downscale is related to the replacement of the full mocap system by IMUs (i.e. Inertial Movement Units with 9 degrees of freedom). A number of IMUs are placed on the body of the dancer using a simple wearable GoPro chest mount harness. Three of them are located on the back of the dancer (hips, trunk, and shoulders layers). In this prototype the direction of each plane is visualised by arrows, showing the basic component of the "postural tension" feature.





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Top left: Desktop interface of the 'postural tension' tool

Top right: Chest mounts harness for GoPro

Bottom: Interface of the directionality measurement tool developed by PoliMi

One of the many possible exercises can be similar to the previous one: the teacher specifies a number of different directions of the various body planes; then the dancer can try to orientate the hips, trunk, and shoulders towards those directions. The chest mount harness for GoPro adapted for this prototype is shown in the figure below. The IMUs (placed on the back) that measure trunk and shoulder planes are shown in red. A third plane (hips) is on the coccyx. Further 4 IMUs are on wrists and ankles. This configuration enables to measure a number of other features.

Both prototypes are a starting point for possible serious games to help the dancers to train their orientation towards different points, directions, and planes, both relative and absolute, and ultimately to enhance their directionality awareness. In fact PoliMi has already developed a prototype of an add-on feature for the library of movements, which visualises and measures the angle formed by the orientations of the pelvis and the face of the dancer. This angle is reckoned a suitable means for the measurement of directionality. PoliMi is currently working on improving this feature. A number of other developments beyond this specific one are being discussed between UniGe and PoliMi.

These prototypes have been developed within the framework of the so-called "movement sketching" paradigm. While the library of movements is based on high-quality motion capture and other multimodal data, the WhoLoDancE consortium is working towards the adoption of 'Movement Sketching' paradigm, which will allow a non-verbal access to the library of movements. Through movement sketching, dance practitioners, students, and professionals will be able to create their own recordings of dance sequences by performing them, and query the repository in order to find similar dance segments. This will allow the users to compare, correct and integrate their interpretation and the ones of professionals and teachers.

WhoLoDancE workshop in partnership with MOCO'16 in Thessaloniki

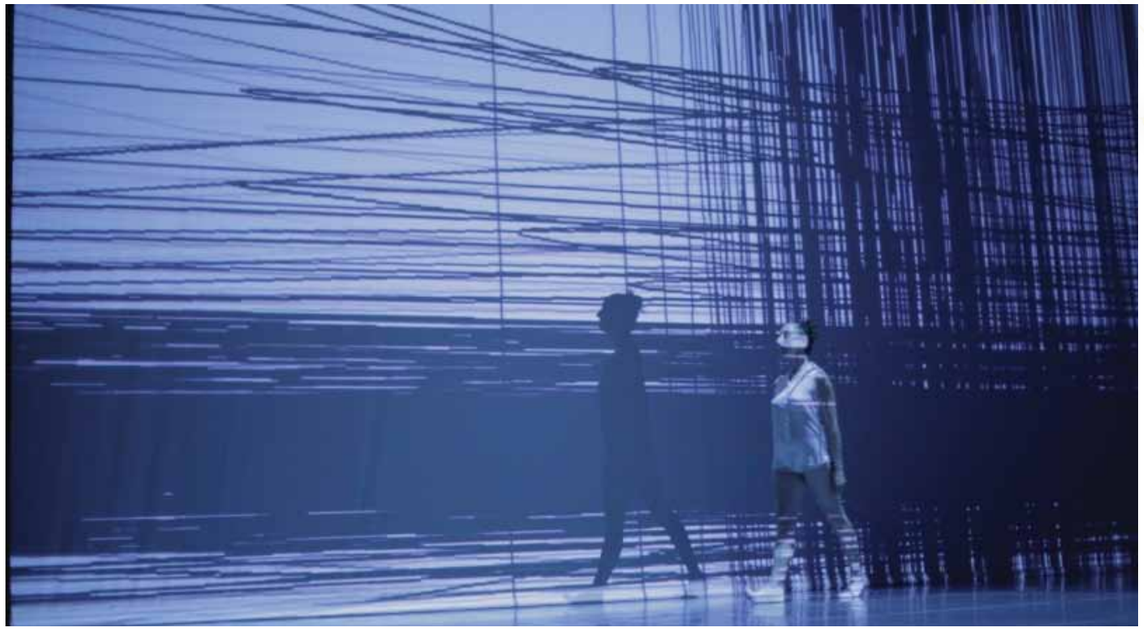
< Poster of MOCO 2016

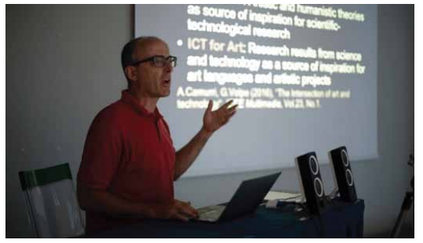
In July 2016 the consortium of WhoLoDancE organised a workshop in Thessaloniki in partnership with the 3rd International Symposium on Movement and Computing (MOCO'16). The workshop included demos and presentations by the project partners, as well as a speech by an invited speaker (Philip Barnard). The workshop included a hands-on session and focus groups, where the participants had to work together to create short scenarios, brainstorm and sharing their outcomes with the rest of the participants. The event closed with an open discussion of technological tools in dance learning. In addition, a poster has been presented to the main event and all WhoLoDancE partners participated to both the main conference, and the workshop. In addition, a performance by the partner Stocos was included in the main program of the conference.

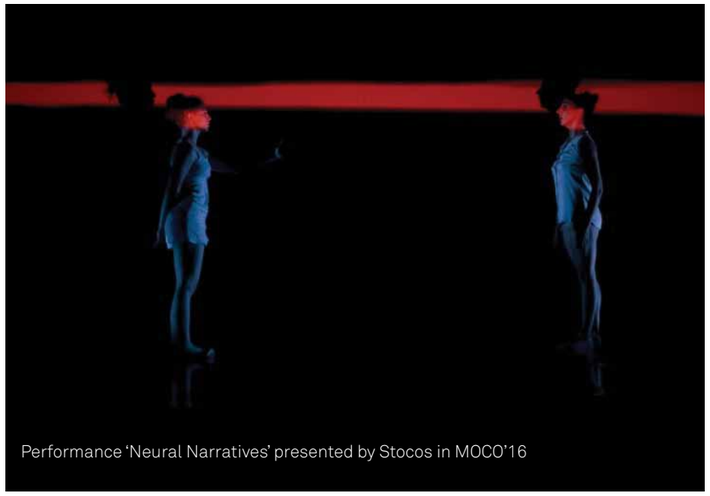
The main objectives of the workshop were a) to present the objectives of the project within the wider context of movement computing, cognition, dance and technology, b) to communicate to and acquire feedback from experts of different relevant background on the initial conceptual framework of the project, c) to disseminate the project and bring together people with relevant interests (dance practitioners, choreographers, new media artists, ICT researchers and developers).

The workshop brought together experts and researchers from a variety of backgrounds, raising discussions on topics in these relevant areas. The co-organization with MOCO'16 and the close collaboration with the Movement Computing community created an excellent field for exchange of ideas with the wider community not only during the days of the workshop (6th July evening and 7th July) but also during the main conference, since the vast majority of WhoLoDancE partners, have not only attended the main conference but also had the chance to present their previous and relevant work during the main-paper presentations, demos and artistic installations and performances. This fact highlights the excellence of the partners, through their involvement in one of the top and state-of-the art conferences which brings together technologies, computing, cognitive science, human computer interaction, movement and art.

V Performance 'Neural Narratives' presented by Stocos in MOCO 2016






Performance 'Neural Narratives' presented by Stocos in MOCO'16

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Top: Antonio Cammuri (UniGe) giving a presentation at the *WhoLoDancE workshop in Thessaloniki*

Bottom: Jean-Marc Matos (K.Danse) giving a presentation at the *WhoLoDancE workshop in Thessaloniki*

< Pablo Palacios (Stocos) giving a presentation at the *WhoLoDancE workshop in Thessaloniki*

The research interests and topics of MOCO'16 and WhoLoDancE are obviously very relevant. For this reason, Athena RC came into communication with the organizers and the community of MOCO since the beginning of February 2016. Following a number of communications, between Athena RC, as a representative of the consortium and a fruitful collaboration with the MOCO organizing committee, we came to a common agreement of having the WhoLoDancE workshop as a satellite event of the MOCO'16, at the same venue. Both events have been disseminated and supported through MOCO'16, WhoLoDancE and Athena RC's webpages, posters and social media. The WhoLoDancE project has been announced as one of the supporting-sponsoring EU projects of MOCO.

^ Keynote speaker Philip Barnard speaking at the WhoLoDancE workshop in Thessaloniki

v Focus Group during the Workshop at MOCO 2016

The first users' board session in Milan

^ Panel Discussion during the Users' Board Session in Milan

On the 6th of December 2016 a first users' board session was held in Milan. During this session the outcomes of the first year of WhoLoDancE were presented to a panel of distinguished dance experts and thought leaders in the fields of movement and computing, who provided critical feedback on the progress of work, and shared their thoughts and views on the challenges and opportunities within the project. After a first round of demo presentations and a panel discussion, covering the first 11 months of achievements by the consortium, the attendees provided comments and suggestions that can be taken into account in the forthcoming steps of the WhoLoDancE work.

The feedback received by the experts was encouraging. Most participants appeared enthusiastic about the overall content of the project, impressed by the technical developments made so far, and curious about the expected outcomes, and they provided specific suggestions on how to improve WhoLoDancE content wise. The list of participants in the users' board is presented in the following table.

NAME	OCCUPATION	AFFILIATION
Chiara Bassetti	Researcher in human action-in-interaction and the role of tools and technologies	Laboratory for Applied Ontology ISTC-CNR
Joseph Fontano	Choreographer, Professor specialized in Contemporary and Classical Dance	Academia Nazionale di Danza
Letizia Gioia Monda	Choreographer, Performer and Researcher specialized in Digital Technologies	Sapienza University of Rome
Goffredo Haus	Full Professor and Director of the Departement of Informatics at Università degli Studi di Milano	Università degli Studi di Milano
Alberto Sanna	Director of e-Services for Life and Health within the S. Raffaele Hospital, former photographer at La Scala Ballet Company	Ospedale San Raffaele
Ariella Vidach	Performer, Coreographer and founder of the company Ariella Vidach - A.i.E.P	Ariella Vidach - A.i.E.P
Claudio Prati	Collaborator at the Company Ariella Vidach - A.i.E.P	Ariella Vidach - A.i.E.P
Benjamin Pech	Choreographer and Dancer	Teatro dell'Opera di Roma
Daniele Baldacci	Light Designer, Cinematographer	BluecinemaTV
Leonetta Bentivoglio	Journalist and Writer	La Repubblica (National Newspaper)
Anton Koch	Researcher at Motion Bank	Motion Bank

I think the project has a huge potential, and it is incredibly amazing the work the experts developed in just one year. In particular, I have been very impressed by the work carried on the movement principles, being able to get in dialogue so many expressions of the same form of art. I am very curious to see the future results of this very ambitious project — Letizia Gioia Monda

I think the project is well-advancing and its result will be of value for researchers and practitioners alike, especially in terms of cultural heritage and movement analysis — Chiara Bassetti

My overall impression is extremely positive. I await to see how it will develop and become just a little bit more human-looking by bringing expression into the movement range that is being — Joseph Fontano

The work appeared to me accurate and well done. Whether the project goals are achieved in the end or not, the deepened process of approaching these goals, would be of great usefulness for those in the sector — Leonetta Bentivoglio

I have got a very good impression about the content of the project. The work seems to be progressing fast and to an interesting direction. I am looking forward to seeing the final product, which may even offer opportunities to introduce dance knowledge to the general public — Alberto Sanna

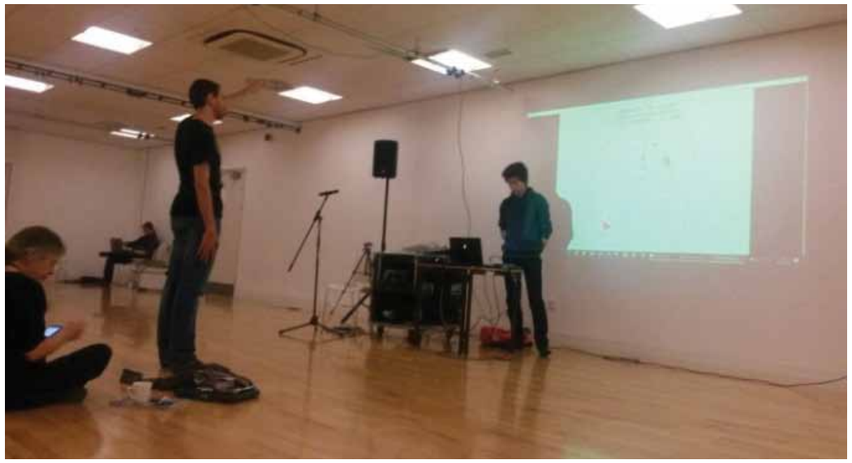
The WhoLoDancE project is a challenging journey that offers new opportunities to study movement with the technological support. Through his body, the man experiences his limits, tests his senses and challenges his physical potentials. The body power and its strength cannot be questioned, yet when it comes to go beyond boundaries, the man avails himself of technological devices, which enable him to see what's invisible and to document it, so giving birth to new form of knowledge — Ariella Vidach

Consortium meeting in Coventry: From Dance Theory to Practice

On the 24th-25th of January 2017 the WhoLoDancE consortium gathered at the Institute of Creative Enterprise in Coventry. All participants attended a number of dance workshops that were instructed by the dance partners. The purpose of this meeting was to establish a common ground of understanding of basic movement principles among dance and tech partners, which will play a key role for the technical developments necessary within the framework of WhoLoDancE, such as directionality, rhythm, and qualities of movements. The members of the consortium had the opportunity to participate in basic exercises of the four dance genres that the project focuses on, i.e. contemporary, ballet, traditional Greek and flamenco, and to experience the actual meaning of each principle from the perspective of a dance student.

After completion of the dance workshops, the tech partners presented prototypes of tools showing examples of how to teach orientation or other movement principles. In the end of the day the tech-partners gave their feedback on the dance sessions. They all agreed that the dance workshops had been very useful in increasing their understanding and awareness of principles and concepts in dance practice, which are necessary for directing the technical work towards impactful developments.

On the second day of the meeting a broad discussion on what has been achieved so far and on the missing links



> Tech partners presenting tool prototypes (the HoloLens)

LEFT PAGE
Workshop of Greek dances by Amalia Markatzi

Ballet workshop by Muriel Romero

towards the presentation of a running prototype of the project's final product. The discussion concluded with determining the focus points of the consortium in the forthcoming six months, which are listed below:

1. Introduce expressivity/quality of movements as metadata into the library of movements and the blending machine;
2. Develop a web-based users' interface allowing the dance partners to annotate data acquired during the motion capture sessions and develop tools for the semi-automatic annotation of features such as music signals/rhythm;
3. Introduce the possibility of 'movement sketching' into the similarity search tool;
4. Define specific pedagogic tools that make use of the technical tools developed by WhoLoDancE aiming at realistic teaching/self-learning purposes;
5. Prepare for MOCO'17 and other dissemination events.

WhoLoDancE Presentations

WhoLoDancE's Partners members took part in several events in Europe with audience raging from general public to academics. A brief description of the main events and the partners' participation to them is presented below.

1 Sarah Whatley, Rosamaria Cisneros and Karen Wood (CovUni) during panel discussion at the Dance HE event

2 Sarah Whatley (Coventry University) presentating at EuroMed 2016

3 WhoLoDancE during Sarah Whatley's (CovUni) presentation at EuroMed 2016

4 Poster of Light Moves festival

WhoLoDancE & Dance HE Event

Event: DANCE HE Report

Website: www.dancehe.org.uk | **Date:** 28th - 29th October 2016

Partner: Coventry Univeristy

Team members: Sarah Whatley; Rosamaria Cisneros; Karen Wood

Intervention: Presentation as part of C-Dare Intangibile Cultural heritage Panel

WhoLoDancE & EuroMed Conference

Event: EuroMed Conference International Conference on Digital Heritage

Website: www.euromed2016.eu | **Date:** 31st October- 5th November 2016

Partner: Coventry University

Team members: Sarah Whatley

Intervention: Keynote "Preserving the Intangible, Tools for Documenting and Sharing Folkloric Dance"

WhoLoDancE & Light Moves Festival of Screendance

Event: Light Moves Two Day Symposium: A fascinating two days of presentations on the 2016 symposium theme *Identity in Focus - Body, Site and Frame*

Website: www.lightmoves.ie | **Date:** 3rd - 6th November 2016

Partner: Coventry Univeristy

Team members: Karen Wood, Rosamaria Cisneros

Intervention: Presentation part of panel on Day 2

5 Edwin Morley-Fletcher presenting WhoLoDancE at the Auditorium in Accademia Nazionale di Danz

6 WhoLoDancE Project Poster the Athens Science Festival

7 Katerina El Raheb (Athena RC) during her project presentation at AVI2016

8 Katerina El Raheb (Athena RC) presenting WhoLoDancE Project at CID 2016

Accademia Nazionale di Danza

Event: International Dance Day

Website: www.giornaledelladanza.com/home/2016/04/gidand-giornata-internazionale-della-danza-allaccademia-nazionale-di-danza

Date: 28th April | **Partner:** Lynkeus

Team members: Edwin Morley-Fletcher; Stefano Di Pietro

Intervention: Presentation of WhoLoDancE Project

ASF2016 Athens Science Festival

Event: Athens Science Festival

Website: www.athens-science-festival.gr/en/

Date: 5-10th of May | **Venue:** Athens, Greece

Project: WhoLoDancE | **Partner:** ATHENA RC

Team members: Katerina El Raheb, Vivi Katifori

Intervention: Athena team participated to the event and represented WhoLoDancE project through a booth during all days of the event

AVI2016

Event: WhoLoDancE participation to the workshop HCI and the Education Technology Revolution and the AVI2016 conference

Website: www.avi2016.di.uniba.it

Date: 7th - 10th June 2016 | **Venue:** Bari, Italy

Project: WhoLoDancE | **Partner:** ATHENA RC

Team members: Katerina El Raheb

Intervention: Athena's team have participated to the workshop HCI and the Educational Technology Revolution, organized by professor Alan Dix and discussed the state-of-the-art of ICT based education and current issues, challenges and advancements. A related paper has been presented and published in a special issue of a scientific journal

CID 2016

Event: WhoLoDancE presentation at the CID-UNESCO 44th Congress on Dance Research

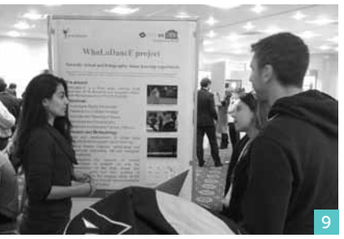
Website: www.2016congressathens.cid-world.org

Date: 29th June-3rd July 2016 | **Venue:** Athens, Greece

Project: WhoLoDancE | **Partner:** ATHENA RC

Team members: Katerina El Raheb

Intervention: Athena team has participated to the congress and presented the project scopes and objectives during a 30minutes presentation



9

EuroVR 2016

Event: EuroVR2016 Conference

Website: www.eurovr-association.org/conference2016

Date: 22nd-24th November 2016 | **Venue:** Athens, Greece

Project: WhoLoDancE | **Partner:** ATHENA RC

Team members: Katerina El Raheb

Intervention: Poster presentation, during the dedicated session and participation to the conference

The Euro VR is designed to bring together all those interested in VR/AR Technologies and to pursue the development and further deployment of such technologies. The Euro VR purpsue the following goals:

10

Researcher's Night in Athens

Event: WhoLoDancE Workshop at the Researcher's Night in Athens

Website: www.researchersnight.gr/, http://www.athenarc.gr/researchers.night/?p=104 | www.athenarc.gr/researchers.night/?p=142

Date: 27th and 30th September | **Venue:** Athens, Greece

Partner: ATHENA RC

Team members: Katerina El Raheb, Vivi Katifori, Aristotelis Kasomoulis

Intervention: Athena's team represented WhoLoDancE project

11

Corps humain, avatar numérique et arts vivants

Event: Seminar "Corps humain, avatar numérique et arts vivants"

Website: www.data.over-blog-kiwi.com/0/99/15/30/20161022/ob_93144c_programme.pdf | www.athenarc.gr/researchers.night/?p=142

Date: 27th October | **Venue:** Paris, France

Partner: K.Danse

Team members: Jean-Marc Matos

Intervention: Jean-Marc Matos represented WhoLoDancE project

9 Katerina El Raheb presenting WhoLoDancE Poster at EuroVR2016

10 Work Groups in Athens during the workshop

11 Poster of the Seminar at Paris8

Issue **#1**

NEWSLETTER INFORMATION

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Subscription
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For subscription to the newsletter please go to **www.wholodance.eu**

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