WHOLODANCE

Whole-Body Interaction Learning for Dance Education

Call identifier: H2020-ICT-2015 - **Grant agreement no**: 688865

Topic: ICT-20-2015 - Technologies for better human learning and teaching

Deliverable 9.1

Kick-off meeting report

Due date of delivery: March 1st, 2016

Actual submission date: March 2nd, 2016

Start of the project: 1st January 2016
Ending Date: 31st December 2018

Partner responsible for this deliverable: LYNKEUS

Version: 2.0

Dissemination Level: Public

Document Classification

Title	Kick-Off Meeting Report
Deliverable	9.1
Reporting Period	First
Authors	LYNKEUS
Work Package	9
Security	Public
Nature	Report
Keyword(s)	Kick-Off meeting

Document History

Name	Remark	Version	Date
S. Di Pietro	First draft, based on the discussion during the Kick-Off meeting	1.0	January 29th
S. Di Pietro	Second draft, including the key information of each WPs and a consolidated list of dissemination events	1.1	February 5th
S. Di Pietro	Third Draft, including a consolidated list of action points	1.2	February 10th
S. Di Pietro	Fourth draft, with the review and feedback of the partners	1.3	February 26th
M. De Maldè	Final review and final draft	2.0	February 29th

List of Contributors

Name	Affiliation
Katerina El-Raheb	ATHENA
Oshri Even-Zohar	MOTEK
Antonio Camurri	UniGe
Vladimir Viro	Peachnote
Sarah Whatley	Covuni
Pablo Palacio	Stocos
Jean- Marc Matos	K.Danse

List of reviewers

Name	Affiliation
Mirko De Maldè	LYNKEUS
Edwin Morley-Fletcher	LYNKEUS
Augusto Sarti	PoliMI
Amalia Markatzi	LCGW

Index

Introduction

The WhoLoDancE Kick-Off Meeting has been organised in January 18th-19th, 2016, hosted by the project coordinator, Lynkeus, at its premises in Rome.

One of the main concerns for projects like WholoDance, which brings together artistic and technical partners, is to coordinate harmoniously the process of developing technologically advanced tools while preserving the artistic value that is at the core of the kind of innovation Wholodance aims to create. For this reason, dedicated moments of brainstorming were organised during the meeting, to solve possible issues or misunderstanding, in order to avoid any possible artistic as well as technical issues capable of jeopardising the fulfilment of the project objectives.

In particular, the dance companies, together with the leader of WP1 ATHENA and the leader of WP7 COVUNI, during a separate session, agreed upon a first version of a short list of movement and learning principles, which are needed to set the theoretical background at the core of Wholodance. More details on this meeting are provided in the description of WP1.

As a result of the whole process, a list of issues and relevant action points has been implemented. This list is provided below in a short version, and at the end of each WP description.

Also, at the end of the meeting, a number of tools developed by the partners during former projects have been presented and discussed, in particular focusing on their possible re-usability and interoperability within the WhoLoDancE framework.

With regard to the coordination effort, a monthly teleconference has been scheduled for the next six months of the project, and at least additional TC per month has been envisioned to solve the issues that may raise during the project development.

To facilitate the cooperation among partners, a google drive account, a dedicated dropbox folder and a Vimeo channel have been created. The latter will also serve for the dissemination of the project. On this regard, partners agreed upon a number of selected dissemination opportunities, while Dance Companies presented a number of dance performances that can be developed within Wholodance and can be of use for the dissemination events that are envisioned.

Consolidated list of agreed action items for the first six months of the project

Action Items	Partners Involved	Deadline set
Upload a list of relevant works, literature, projects and a summary of previous experience	All	30th January
Prepare a template questionnaire for dance schools to describe their teaching methodologies.	Athena, Coventry	30th January
Prepare a template questionnaire for technical partners to describe their technologies	Athena, Coventry	30th January
Define questionnaires format between learning experts, Dance practitioners, Technology Providers	All	7th February
Identify contacts-key persons for the questionnaires	All	7th February
Define targets for the learning tools	All	15th February

Task	Partner	Date
Decide the age range of the target groups for the educational tools.	All	15th February
Provide material from the previous projects to feed WP1 with particular regard to motion's quality.	All	15th February
Prepare a draft plan for the interviews	Coventry	18th February
Organise physical meeting with the purpose to support the requirements elicitation process, decide where and how to store the data and other technical issues (High heterogeneity of data types and standards; Interoperability of services; Algorithms and data flows harmonization)	All	Partners in the parallel session agreed that a physical meeting is needed, to be set between 20th February and 20th March
Decide motion capture locations	Coventry, UniGE, MOTEK	Partners agreed that the capturing will be likely to happen in the three facilities: Coventry, UniGe and Motek.
Circulate a marker setup proposal to ensure the motion capture coherence	Coventry, UniGE, MOTEK	1st March
Set the standard and parameters for the motion capture sessions	Coventry, UniGE, MOTEK	1st March
Provide a List of movements qualities meaningful for the capturing	All	1st March
Organise a detailed capture session	All	Partner agreed to begin the capturing at the beginning of April
Present a paper for the MOCO'16, 3rd International Workshop on Movement and Computing, July 5-6, Thessaloniki-Greece	All	1st March
Final decision about the integration among EyesWeb and Motek's platform	UniGe; Motek	15th March
Discuss the production and development environments and workflow	Athena	15th March
Define a schedule for the Motion Capture Sessions that should be set after the state of the art and the interviews are completed	All	21st March
A number of important projects done outside Europe have to be taken into account for the State of the Art Survey	Athena, K.Danse	1st April
Provide descriptions of body parts that need to be analysed independently of others (e.g. only hands, only feet, etc.)	Motek, Polimi, Coventry, UniGe	29th May
Take care of the safety issues of the learning interface which will be developed, through specific safety validation tests.	All	1st July

Provide a list of search scenarios	All	15th July
Provide detailed descriptions of patterns to be searched and discovered	Motek, Polimi, Coventry, UniGe	15th July
Provide data to be search and analysed for development purposes	Motek, Polimi	15th September

Presentations

## Presentation by the Project Coordinator

Edwin Morley-Fletcher (Lynkeus)

Content of the presentation: Key aspects of the project, presentation and discussion of the WPs with a focus on the needed interactions among the different project activities and mutual dependencies, and action plan for the first six months of the Project.

To start the discussion on a common ground of understanding the following key Objectives and the Expected Impact of WholoDance have been described as follows:

- o To innovate dance teaching and learning through:
    - Advanced motion capture technologies,
    - Life-size Holograms,
    - Ontologies and libraries for the description of dance,
    - Formalised High Level and Low Level Features,
    - Similarity search techniques Applied to Body Movement
- o Create a multimodal repository, able to support the identification of effective teaching methods and practices.
- o Investigate and apply methodologies of personalization to create adaptive and personalized scenarios for learning.
- o Preserving cultural heritage through the documentation of diverse and specialised dance movement practices
- o Provide students and teachers with an entirely new way to access a range of different dance genres through immersive representations of virtual bodies.
- o Enable the student to be moving with a digital projection or hologram that provides real time feedback about movement quality, dynamics, spatial discrimination, emotional content, and stylistic alignment.
- o Make it possible to analyse, compare and search dance data in a meaningful way, providing personalised learning paths
- o Allow choreographers to visualize the desired action as vector flow fields suggesting the flow of motion, this way making it possible to design new choreographies
- o Offer a standardized platform to enable using the same educational real-time paradigm for learning other skills that are motion-driven and require people to learn specific functional movements.

The diagram of interactions among Wholodance Work Packages, already included in the project proposal, was commented upon during the meeting:
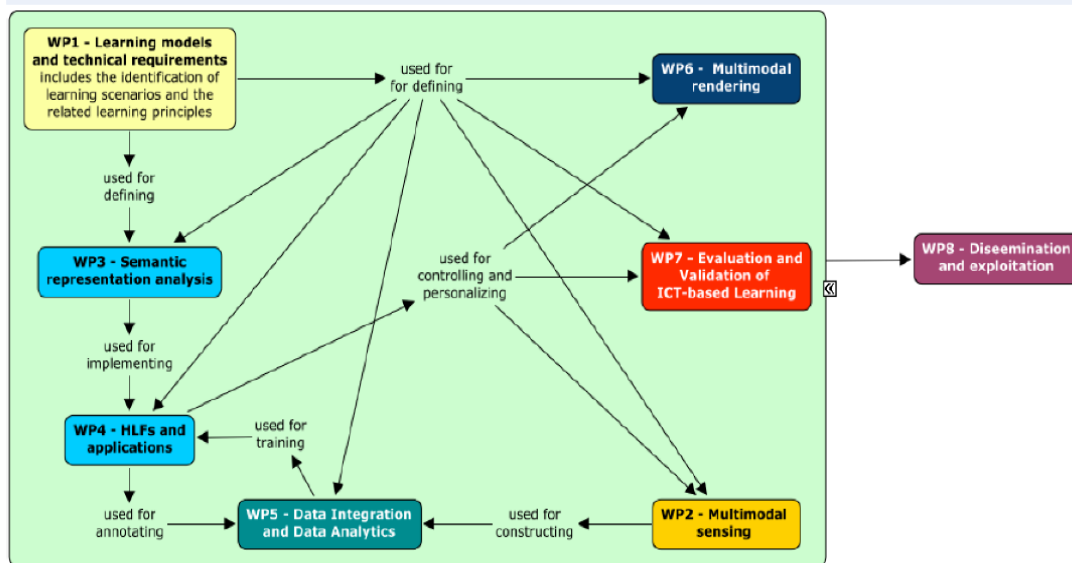
Finally, a basic action plan of the first six months of the project was agreed with all the partners:

List of teleconferences set:

- February, Thursday 18th at 15 CET
- February, Thursday 25th at 15 CET
- March, Thursday 17th at 15 CET
- April, Thursday 21st at 15 CET
- May, Thursday 19th at 15 CET

o List of Scheduled Meetings/Sessions
- March 21st to 24th in University of Genova
- May 2nd to 10th in Motek (Amsterdam)
- July 4th 5th General Meeting after Six Months of running WhoLoDance in Thessaloniki

o Deliverables of the next sixth months of the project
- D1.1 State of the Art Survey [Athena][M6]
- D1.2 Interviews Report
- D2.1 Recruitment protocol and informed consent form
- D2.2 Outcome of the pipeline development
- D8.1 Dissemination and exploitation strategy plan and preliminary materials
- D9.1 Kick-off meeting report
- D9.2 Project Presentation
- D9.3 Self-Assessment Plan

## WP1: Learning Models and technical requirements [M1-16]

Katerina El Raheb (Athena RC)

Content of the presentation: Content, possible issues and next steps to be taken with particular focus on Wp1.

A shortlist of movement principles was completed during the dancers' separate meeting.

- Objectives and Outcomes of WP1
  - M1-M6
    - Provide the basis for the evaluation in WP7
    - Draw up the SoA of the ICT based Dance Learning Domain [T1.1 State of the Art Survey (M1-M6)]
    - Capture actual needs, issues and potential improvements of the methodology of the desktop research and gives input to W2, W3, W4, WP6 [T1.2 Interviews (M1-M6)]
    - Present the project and preliminary outcomes to the public and research and education community and receive feedback and further input [T1.3 Workshop (M3-M6)]
  - M6-M16
    - To assure the user-centered perspective of the system and its use in different contexts according to the needs of the dance communities [T1.4.1 Need Analysis (M6-12)]
    - To define the technical requirement and specifications for the various functionalities to be offered to the users [T1.4.2 Requirements Elicitation for Application Scenarios and Interface Definitions with Respect to Framework Integration (M6-12)]
    - Define a methodology protocol for collecting data (how to capture) and the contexts of capturing (place, performers- teachers, dance experts, dance genre) [T1.5. Data Acquisition Plan (M6-12)]
    - Definition of the main categories of High Level Features that is worth considering for the Learning Scenarios. [T1.6. High Level Features definition (M3-09)]
    - Enabling the creation of meaningful algorithms for personalisation and adaptivity by assessing relevant preferences and learning characteristics of the users [T1.7. User Profiling (M10-16)]
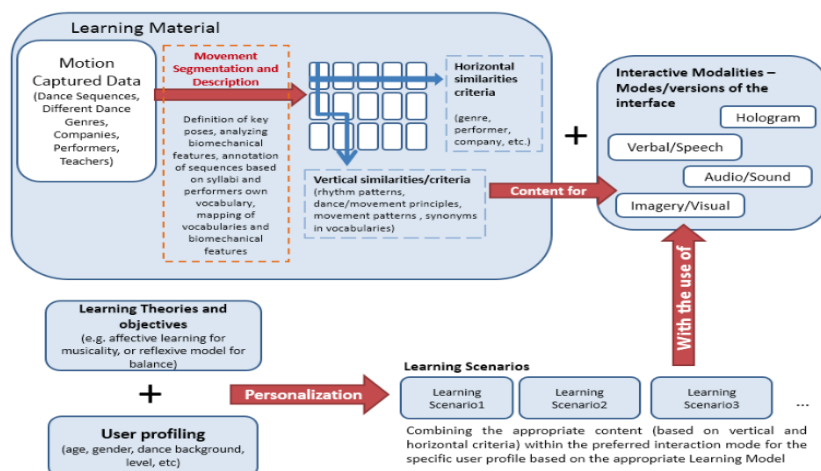
Shortlist of the movement principles:

The following key movement principles were listed after the meeting among dance partners and the leaders of WP1 and WP7.

1. Symmetry (asymmetry, isometry)
2. Directionality
3. Balance
4. Alignment/Posture Stability
5. Weight Bearing/Gesture
6. Gross vs fine motorics (isolation/articulation)
7. Coordination
8. Motion through space
9. Rhythm/Phrasing
10. Stillness

This is a first list, a starting point that envisages the direction of the project aims, and it will be iteratively updated and revised during the evolution of the project.

The list was further discussed also with the technical partners, to understand how to translate these principles in basic movements to be captured during the motion capture sessions.

During the discussion, it was deemed appropriate by the dance partners to consider also the following learning principles, which may result in different learning process scenarios, to be represented by the avatar:

1) Mimesis
2) Reflexive
3) Generative
4) Traditional

Open issues and action items

Open Issues/Requests	Partners Involved	Action Items	Deadline set
Define questionnaires format between learning experts, Dance practitioners, Technology Providers	All	Partners agreed on defining details and exchanging material online and set a deadline for the final version of the format to be completed.	7th February
Partner propose contacts-key persons for questionnaires (All)	All	Partners agreed on proposal and set a deadline	7th February

Task	Partner	Agreement	Deadline
Workshop Proposal: MOCO'16, 3rd International Workshop on Movement and Computing, July 5-6 ,Thessaloniki-Greece (Call for Papers submission deadline 15th February)	All	Partners agreed on the proposal and will send their contribution for the workshop	1st March
Prepare a template questionnaire for dance schools to describe their teaching methodologies.	Athena, Coventry	Partners involved agreed on preparing the template and set a deadline	30th January
Prepare a template questionnaire for technical partners to describe their technologies	Athena, Coventry	Partners involved agreed on preparing the template and set a deadline	30th January
Draft a plan for the interviews	Coventry	The partner agreed on drafting a plan for the interviews and set the deadline	18th February
List of five related work, literature, projects and a summary of previous experience	All	All partners agreed on providing the requested material. The coordinator created A dropbox folder immediately and shared it with the partners for storing the material requested.	30th January
Physical meeting with the purpose to support the requirements elicitation process	All	Partners in the parallel session agreed that a physical meeting is needed, after the videos are ready, but before the beginning of the Motion Capture. A possibility proposed was to organize a parallel session during the technical meeting.	to be set between 20th February and 20th March

WP2: Multimodal Sensing and Capturing Analysis [M2-23]

Oshri Even Zohar (Motek Entertainment)

Content of the presentation: Content, possible issues and next steps to be taken with particular focus on WP2

Presented the Motion capture process envisioned, discussed technical and artistic constraints and presented some of the available tools for carrying out the motion capture data acquisition and processing involved.

Screenshots from presented tools:

1: Global UI of concept blending platform.

Discussed the different processes of motion capture data blending based on blending of accelerations and velocities of different body parts, while maintaining proper physical and morphological constraints. Also presented the functionality of the perceived tools.
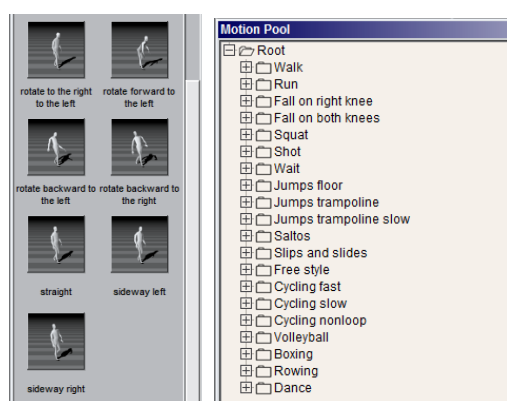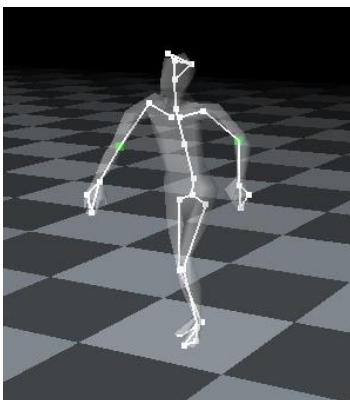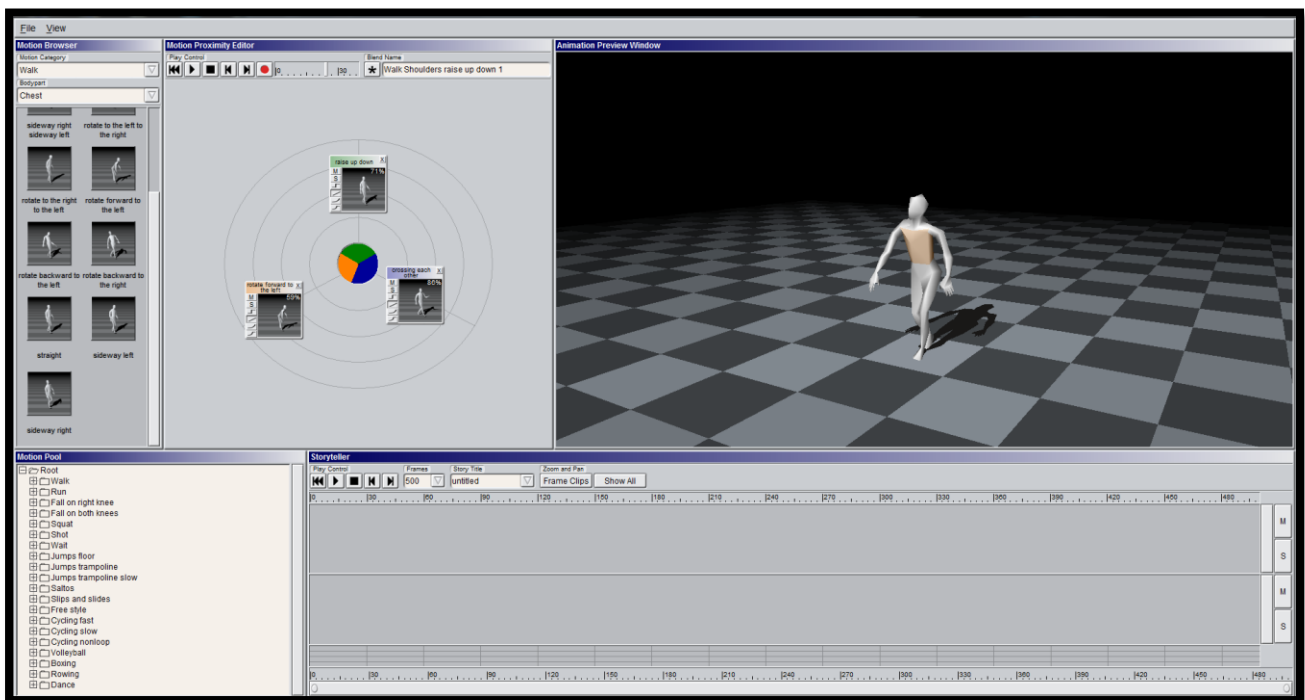
2: Avatar Creation concepts.

In addition, presented the proposed concepts of creation of avatars that can have an enveloping effect around the dancer, and avatars that are created using particle systems that serve to illustrate the force array that the dancer makes as part of the volumetric envelope.
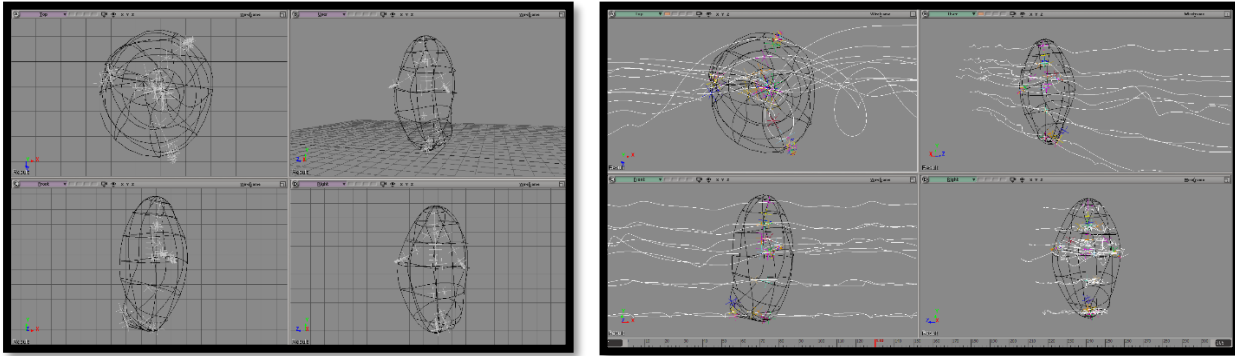
- Objectives and Outcomes of WP2
  - M1-M9
    - Prepare and submit to the dancers the recruitment protocol, participant information sheet and the informed consent form. [T2.1 Recruitment protocol and informed consent form (M1-M3)]
    - Define list of Key-Poses / Key Transitions / Key body statuses per selected genre and optimal marker set and multi-sensor composition [T2.2 development of the pipeline that will enable the proper creation of a blendable motion capture repository (M2-M5)]
    - Integrate additional input channels into the optical motion capture pipeline, including e.g. accelerometers and microphones (for respiration and vocal utterances); implement solutions for inference of missing data in low-cost motion tracking devices for real-time applications, characterize and reduce of noise in captured data and solve automatic data curation issues [T2.8. Cross range devices, scalability and real-time data processing (M2-M7)]
    - Create a detailed shot lists, a design document for the syllabus display and blending software motion capture pipeline suited for the project and begin the capture sessions [T2.3 Capture (M4-M7)]
    - Enable authentication, archiving, management, preservation, retrieval, and representation of the data collected. [T2.4 Data Curation (M8-M9)]

  - M9-M22
    - To develop and create several kinds of avatars for real time interactive visualizations [T2.5 3D Avatar construction (M9-M15)]
    - Create and implement of inverse kinematic skeletons for the avatars modeled in T2.4; create materials, textures, lighting setup and shaders for the models and perform the preliminary real- time testing of those assets. [T2.6 Skeleton Fitting (retargeting) and visualization (M16-M17)]
    - Clean and Process the data collected (Motion edits, Motion looping and retargeting preparation, Benchmarking and optimization of data blending and 3D Optimizations)[T2.7. Post processing M18–M22)]

Open issues and action items

Open Issues/Requests	Partners Involved	Action Items	Deadline set
Motion capture locations	Coventry, UniGE, MOTEK	Partners agreed that the capturing will be likely to happen in the three facilities: Coventry, UniGe and Motek. To organize the capturing and see how to distribute the work, partners set a deadline to see the facilities.	1st March
Motion capture coherence	Coventry, UniGE, MOTEK	A proposed marker setup will be circulated based on full body + fingers. UniGe will check compatibility with its Qualysis system	1st March
Set the standard and parameters for the motion capture sessions	Coventry, UniGE, MOTEK	Partners agreed on solving the issue online and set a deadline for the definition of the parameters and standards.	1st March
Provide a List of movements qualities meaningful for the capturing	All	Partners agreed on the proposal and set a deadline for the movement quality list to be completed and validated by technical and dance partners.	1st March
Final decision about the integration among EyesWeb and Motek's platform.	UniGe; Motek	The partners agreed and decide to solve the issue online exchanging information about the different tools. Partners set the deadline taking into account that a new version of EyesWeb will be released by the end of February.	15th March
Set the timeline for the motion capture sessions	All	Partners agreed on a target for the starting of the motion capture sessions. Comprehensive shot lists should be done by then.	1st April

WP3: Semantic and Emotional Representation Model [M1-M30]

Augusto Sarti (PoliMI)

Content of the presentation: Content, possible issues and next steps to be taken with particular focus on WP3

- Objectives and Outcomes of WP3
  - To be completed before M18

    - Identify and build suitable annotated datasets (for training purposes); identify relevant families of features and select subsets of the most discriminant descriptors; and a family of emotional analysis methodologies HLF extraction using dance-related ontologies, etc. [T3.2.1. Musical signal modelling (M1-M6)]
    - Model motion data, as captured by high-end Motion-CAPture (mocap) systems, low-end mocap, and low-cost motion sensing devices (wearable or not) such as Kinect, accelerometers, and other types of sensors (gravity, magnetic, proximity, etc.). [T3.2.2 Motion signal modelling (M1-M12)]
    - Model the signal related to multimodal sensors for the assessment of the status of dancer's body or of the environment (lighting, vibrations, etc.), also identify existing and evaluate datasets or construct and annotate new ones, as well as identify and characterize signal constraints, measuring noise, suitable features and analysis methodologies. T3.2.3. Modelling signals coming from body sensors and environment sensors (M4-M12)]
    - Model of video data for the analysis of dance [T3.2.4. Video signal modelling (M4-M12)]
    - Develop network-like representation models, in which the nodes model either key body parts (intra-personal level) or dancers/audience members (inter-personal level) and the links are connections of various kinds between pairs of such nodes [T3.1.4. Inter- and intra-network representation models (M7-M12)]
    - Develop representation models for dance: a first representation layer is based on semantic description, i.e. the construction of suitable ontologies for the description of all aspects of dance and its relation to music heterogeneity of relationships not only among features of the same kind (e.g., emotional and semantic ones) but also among features of different kinds (e.g., influences of movements on emotions) [T3.1.1 Development of semantic representation models (M 4-16)]
    - Define appropriate emotion models, including relations with (discrete as well as continuous) models of music emotions and of expressive movement and dance [T3.1.2. Development of emotion representation models (M7-M18)]

  - To be completed before M30

    - Model group dance as cooperative games and apply methodologies from cooperative game theory. [T3.3.4. Analysis methodologies: inter-network-driven (M4-M24)]
    - Develop and the characterize suitable data-driven machine learning methods for training-based multimodal analysis (clustering, gaussian mixtures, deep learning), and with targeted HLFs as well as automatically identified HLFs. [T3.3.1. Analysis methodologies: data-driven solutions [M4-M24]
    - Develop and characterize suitable machine learning methods with reference to specific models for HLFs and descriptors, aimed at minimizing the need of training. [T3.3.2. Analysis methodologies: model-driven solutions (M4-M24)]
    - Get insight into the performances of single dancers. To this end, spectral graph methods and tools will be exploited. [T3.3.3. Analysis methodologies: intra-network-driven solutions [M4-M24]
    - Identify Relations and dependencies between multimodal descriptions of dance and music, taking into account musical signals and related descriptors, but also body motion signals (and related constraints): this task will evaluate also the multimodal integration

of breathing signals, EMG sensors, accelerometers (including contact accelerometers on the floor), cameras, etc [T3.1.3. Joint music-dance representation (M12-M24)]

- Develop algorithms (SW modules) that measure specific verbal descriptors (key terms) and non-verbal expressive descriptors of music (in dance context) from audio signals, in relation to multimodal data coming from dance-related sensors, as identified by the ontologies constructed in T3.1. [T3.4.1. Development of a SW library for emotional and expressive analysis from musical signals (M7-M30)]
- Develop software modules that measure in real-time non-verbal expressive behaviour, with a particular focus on expressive gesture, emotion, and non-verbal social signals, starting from the signals measured in WP2. [T3.4.2. Development of a SW library for Emotion Analysis from full-body movement and multimodal data (M7-M30)]
- Use real-time measures to influence the interactive music and sonic sensory supplementation, to provide appropriate feedback to the teacher, to update personal profiles, and to evaluate training sessions. The sensors utilized for these measures will be an extension of those used in WP2. [T3.4.3. Development of a Software Library for Non-Verbal Social Signals Analysis (M7-M30)]
- Define and implement Intelligent algorithms to recognize in real-time physical activities performed by one or more dancers with or without the teacher. These will include real-time movement and behaviour analysis, starting from the existing state-of-the-art developed by UNIGE on the EyesWeb platform, and integrating new wearable and environmental activity sensors, including sensors embedded in Smart phones and movement sensors (e.g. Notch sensors). [T3.4.4. Multimodal analysis of qualities in individual dance (M7-M30)]

Open issues and action items

Open Issues/Requests	Partners Involved	Action Items	Deadline set
To decide which technology will be used for the motion capture. The objective will be to have a scalable platform, from Vicon and Qualisys to cheap and portable systems such as accelerometers and Kinect.	PoliMI, MOTEK, Coventry, UniGe	The partners agreed during the meeting on specific activites (e.g. between Motek and Unige) to define an agreed standard for mocap data and onbody markers setup. The scalable project platform will however enable users to use also	

		low-cost technology "in the wild", such as the Kinect.	
To decide which technology will be used for the caption (if only Viacom or also Kinect).	PoliMI, MOTEK, Coventry, UniGe	The partners agreed during the meeting that the caption will be performed using Viacon but users will be able to use Kinect for training and interaction with the Hologram Developed in WP6.	
It is important to have different perspectives for the interviews: not only dancers but also experts and non experts to obtain useful descriptors to train the algorithm in a the more detailed way.	All	The partners agreed during the meeting to use different target for the questionnaires.	
For the work in WP3 It is important to look at the functionalities of EyesWeb in depth.	UniGe; PoliMI	The partners agreed to meet at UniGe's facilities and at the 5th EyesWeb Week in Genoa but will have technical meetings online before to analyse general features and functionalities in depth.	6th June

WP4: Automated Analysis of Multimodal Features and Similarity Search[M3-30]

Vladimir Viro (Peachnote Gmbh)

Content of the presentation: Content, possible issues and next steps to be taken with particular focus on WP4

- Objectives and Outcomes of WP4
    - Assessment and development of similarity search and indexing methods for HLFs which are suitable for real-time and batch processing of high bandwidth, noisy input data (HLFs) in the proposed application scenarios [T4.1.1. Base algorithms and generic functionality for similarity search, live-indexing and clustering methods (M4-M10)].
    - Facilitate consistent and coherent model building for similarity search methods across data sources, including the building of suitable databases for the application scenarios. [T4.1.2. Consolidation of HLF data sources for consistent model building (M11-M18)]
    - This task focuses on the evaluation and definition of HLF indexing schemes, in the form of subsets of HLF data, that are suitable for the application scenarios. [T4.1.3. Definition and evaluation of suitable structuring of search indices for application scenarios (M11-18)]
    - Encapsulate common similarity search and indexing tools into reusable components. [T4.1.4. Implementation of suitable components to encapsulate common similarity search and indexing contexts (M12-M24)]
    - Create algorithms that will allow: (a) Recommending scenarios to the user based on her preferences, learning goals, and current dancing skills, (b) Adapting the scenario itself, and in real-time, based on the evolving profile of the user. Making use of the output of WP1, Tasks T1.4 and T1.7 [T4.2.1. Adaptivity & Personalization Algorithm implementation (M12-M30)]
    - Analyse and define framework architecture with respect to functional and non-functional requirements for modular and reusable subsystems employed in the various application scenarios including data exchange formats. [T4.2.2. Generic middleware architecture design and implementation (M7-M20)]
    - Model the trajectories with time stamps of the various articulations of such simplified body model as parametric functions of time in affine space (e.g., by spline interpolation) and other derived functions. Respiration data and individual parameters will enrich and complete the multimodal features. [T4.2.4 Parametric functions of time in affine space (M 7-24)]
    - Analyse and Estimate the potential functional requirements for prototypical applications and develop and made available the respective functional [T4.2.3. Component specification and implementation for application scenarios (M12-M24)]

Open issues and action items

Open Issues/Requests	Partners Involved	Action Items	Deadline set
Provide detailed descriptions of patterns to be searched and discovered	Motek, Polimi, Coventry, UniGe	The partners agreed on providing the description and set a deadline for the task to be completed.	15th July
Provide descriptions of body parts that need to be analysed independently of others (e.g. only hands, only feet, etc.)	Motek, Polimi, Coventry,	The partners agreed on providing the description and set a deadline for the task to be completed.	29th May

	UniGe		
Discuss the production and development environments and workflow	Athena	The partners agreed on discussing the issue and set a deadline.	15th March
Provide data to be search and analysed for development purposes	Motek, Polimi	The partners agreed on providing the data for the deadline requested.	15th September
Provide a list of search scenarios	All	The partners agreed on providing the list for the deadline requested.	15th July

WP5: Data integration & Data Analytics [M1-36]

Yannis Yoannidis (Athena RC)

Content of the presentation: Content, possible issues and next steps to be taken with particular focus on Wp5.

- Objectives and Outcomes of WP5 [M1-M36]
  - Design the repository architecture to support the various formats using the semantic and metadata models proposed in WP3 [T5.2 Conceptual Modeling Annotation (M1-M24)]
  - Data modelling, implementation and integration of the heterogeneous multimodal data acquired by different methodologies [T5.3 Data Integration and Management (M1-M24)]
  - Integration of the various components and the functionalities focusing on interoperability, re-use and sustainability [T5.6 Global Integration (M13-M32)]
  - Efficient and secure integration, authentication, authorization and encryption of the data and development of specific multilevel Application Programming Interface (API) on top of the Data Management Engine [T5.4 Integration and interoperability with external services (M13-M30)]
  - Test and validate the outputs of other tasks ensuring that the final platform meets the expected functional and non-functional requirements and specification of a maintenance plan [T5.7 Testing and validation (M1-M32)]
  - Develop the data infrastructure able to process heterogeneous content, offering querying capabilities and supporting User Defined Functions (UDF) building upon EXAREME (distributed data management and processing system) [T5.1 Building management platform (M1-M36)]

Open issues and action items

Open Issues/Requests	Partners Involved	Action Items	Deadline set
Where and how to store the data	MOTEK, COVUNi, ATHENA, PoliMI, UniGe, Peachnote	The partners agreed on starting a discussion online but the issue should be solved in a Technical 2 days meeting in Athens or Tel Aviv.	Technical meeting date to be set between 20th February and 20th March
High heterogeneity of data types and standards; Interoperability of services; Algorithms and data flows harmonization	MOTEK, COVUNi, ATHENA, PoliMI, UniGe, Peachnote	The partners agreed on starting a discussion online but the issue should be solved in a Technical 2 days meeting in Athens or Tel Aviv where the harmonization and standards of data types can be done.	Technical meeting date to be set between 20th February and 20th March
The age range of the target groups for the educational tools has to be decided.	All	Dance partners agreed that the issue is among the next priorities and will be solved after an exchange of ideas online.	15th February
Another person will be part of the Athena team and will focus especially on the technical parts I will put him in contact with him in the next weeks	All	Agreed	1st March

WP6: Multimodal Rendering, Hologram Development, and Whole Body interaction interfaces [M21-36]

Oshri Even Zohar (Motek Entertainment)

Content of the presentation: Content, possible issues and next steps to be taken with particular focus on WP6

- Objectives and Outcomes of WP6

    o Decide the device to use as a base platform and customize it to the project's specific needs. [T6.1 Research and selection of possible solutions for immersive holographic displays (M21-M27)]

    o To test and optimize intersection feedback types, for effectiveness and validity between a physical dancer and a virtual avatar [T6.2 Development of overlay of intersection detection and feedback (visual, auditory and other) between real and virtual dancers (M27-M32)]

    o Create the system that will offer the personalized and adaptive experience based on ASTE and CHESS projects using the output of T6.2. [T6.3 Development of the Adaptivity & Personalization System (M21-M35)]

    o Technically validate the device customizations developed in T6.1; T6.2. and T6.3 involving also a dancer engaged in the system carrying out dance routines inside a volumetric display. [T6.4 Technical validation of the developed display and intersection models (M34-M35)]

WP7: Data Integration & Data Analytics [M5-36]

Sarah Whatley (Coventry University)

Content of the presentation: The presentation focused on the objectives, possible issues and operational steps to be taken within WP7.

Furthermore, a draft shortlist of the movement principles was completed during the dancers' separate meeting and the discussed during the plenary session.

- Objectives and Outcomes of WP7
  - Providing the overall validation of the project via a clear methodology for testing the tool within the 'real' dancer's environment and in different dance communities drawing on the work in WP1.
  - Planning for sustainability of the platform.
  - M5-M8
    - Evaluation of user interface in different learning scenarios (user feedback, privacy, IPR etc.) [T7.1 Usability and Learning Experience Evaluation (M7-M36)]

  - M5-M36
    - Evaluation of user satisfaction and changes in dance teaching/ learning practices which needs a sufficient number of testers representing sufficient number of learning scenarios, dance genres and contexts and to be appropriate for different testing populations. [T7.3 Personalization Evaluation (M7-M36)]

  - M28-M36
    - Evaluation; measuring impact, enhancement, testing (iteratively) and measuring change to teaching and learning methods over time (beta testing of tool, reporting bugs etc.) [T7.2 Evaluation of learning process through the interfaces (M7-M36)]

Open issues and action items

Open Issues/Requests	Partners Involved	Action Items	Deadline set
Provide material from the previous projects to feed WP1, with particular regard to motion's quality.	All	The partners agreed on sharing their previous projects' outcomes on the dedicate Dropbox folder	15th February
Take care of the safety issues of the learning interface which will be developed, through specific safety validation tests.	All	The partners agreed on this proposal and set a deadline for the safety validation test before the start of the validation task.	1st July
The dancers have to set a schedule of the motion capture. The locations for the caption have to be decided	All	The partners agreed on doing the motion capture session at Motek, Coventry and UniGe and agreed on a deadline for the final scheduling of the motion capture Sessions and the locations for each session.	1st March

Presentation by UNIGE

Antonio Camurri - Gualtiero Volpe

Presented the major tasks in which they are involved, discussed technical and artistic constraints and presented some of the available tools to be developed within the project

University of Genova will be involved in the selected task:

- To be completed not later than M12
    - T1.1. State of the Art Survey [Lead by ATHENA RC][M1–M6]
    - T1.5. Technical Requirements for Data Acquisition [Lead by ATHENA RC][M1-M9]
    - T2.2. R/D – development of the pipeline that will enable the proper creation of a blendable motion capture repository for the different use cases for dance education that will be chosen [Lead by Motek][M2–M5]
    - T2.3. Capture [Lead by Motek][M4–M7]
    - T2.4. Data Curation [Lead by Motek][M8–M9]
    - T2.8. Cross range devices, scalability and real-time data processing [Lead by Motek][M2-M7]
    - T3.2.2 Motion signal modelling [Lead by Motek][M1-M12]
    - T3.1.4. Inter- and intra-network representation models [Lead by UniGE][M7-M12]
    - T3.2.3. Modelling signals coming from body sensors and environment sensors [Lead by UniGE][M4-M12]
    - T3.2.4. Video signal modelling [Lead by UniGE][M4-M12]
    - T3.2.5. Intra-and inter-network signal modelling [Lead by UniGE][M1-M12]

- To be completed not later than M24

    - T3.1.2. Development of emotion representation models [Lead by ATHENA RC][M7-M18]
    - T4.1.2. Consolidation of HLF data sources for consistent model building [Lead by ATHENA RC][M11-M18]
    - T5.2. Conceptual Modelling and Annotation of Data [Lead by ATHENA RC][M1-M24]
    - T5.3. Data modelling, integration and management [Lead by ATHENA RC][M1-M24]
    - T3.3.1. Analysis methodologies: data-driven solutions [Lead by PoliMI][M4-M24]
    - T3.3.2. Analysis methodologies: model-driven solutions [Lead by PoliMI][M4-M24]
    - T3.3.3. Analysis methodologies: intra-network-driven solutions [Lead by UniGE][M4-M24]
    - T3.3.4. Analysis methodologies: inter-network-driven solutions [Lead by UniGE][M4-M24]
    - T4.2.4 Parametric functions of time in affine space [Lead by UniGe] [M7-M24]

- To be completed not later than M36

    - T6.1 Research and selection of possible solutions for immersive holographic displays [Lead by Motek][M21-M27]
    - T5.5. Integration of EyesWeb platform [Lead by UNIGE][M6-M30]
    - T3.4.1. Development of a SW library for emotional and expressive analysis from musical signals [Lead by PoliMi] [M7-M30]
    - T3.4.2. Development of a SW library for Emotion Analysis from full-body movement and multimodal data [Lead by UniGe][M7-M30]
    - T3.4.3. Development of a Software Library for Non-Verbal Social Signals Analysis [Lead by UniGe][M7-M30]
    - T3.4.4. Multimodal analysis of qualities in individual dance [Lead by UniGE][M7-M30]
    - T4.2.1. Adaptivity & Personalization Algorithm implementation [Lead by ATHENA RC][M12-M30]
    - T5.6. Global integration within the WhoLoDance data management platform [Lead by ATHENA RC][M13-M32]

- o T5.1 Building and deployment of data management platform [Lead by ATHENA RC][M1–M36]
  T6.2. Development of overlay of intersection detection and feedback (visual, auditory and other) between real and virtual dancers [Lead by Motek][M27-M32]
- o T6.3. Development of the Adaptivity & Personalization System [Lead by ATHENA RC][M21-M35]
- o T6.4. Technical validation of the developed display and intersection models [Lead by Motek][M34-M35]
- o T8.5 Seminars, Workshops, Concertation Activities with Other ICT Funded Projects, and Community Liaison and Feedback [Lead by LYNKEUS][M1-M36]
- o T9.2. Quality & Reporting [Lead by LYNKEUS][M1-M36]
- o T9.3. Financial Coordination - This task will handle all financial matters that should arise during the course of the project. [Lead by LYNKEUS][M1-M36]
- o T9.5. Meetings and Communications Management [Lead by LYNKEUS][M1-M36]
- o T8.4 Dissemination events [Lead by LYNKEUS][M12-M36]

EyesWeb Platform Description

Presented and discussed the capabilities and feature of EyesWeb platform that will be used to support the design and development of real-time multimodal systems and interfaces.

Open issues and action items

Open Issues/Requests	Partners Involved	Action Items	Deadline set
Define a schedule for the Motion Capture Sessions that should be set after the state of the art and the interviews are completed	All	The partners agreed on setting a deadline for the Motion Capture Sessions taking in to account that the data for the interviews and the state of the art Survey should be already available.	21st March
Define targets for the learning tools	All	The partners agreed on this proposal and set a deadline for the definition of the targets	15th February
Develop movement analysis with an early stage of HBM for the project	Motek, Unige	Partners agreed on trying to develop movement analysis with HBM but the feasibility of the analysis is related to the development of the HBM.	

Presentation by Dance Companies

Jean- Marc Matos (K. Danse) - Pablo Palacio, Muriel Romero (Instituto STOCOS) - Amalia Markatzi (Lyceum Club for Greek Women)

Each Dance Company presented the activities of the company and a number of tools and performances that can be of use of the project.

The Dance Companies will be involved in the selected tasks:

- To be completed not later than M12

    - T1.1. State of the Art Survey [Lead by Athena][M1–M6]
    - T1.2. Interviews of Learning Experts, Dance Practitioners and Technology Providers [Lead by Covuni][M1–M6]
    - T2.2. R/D Development of the pipeline that will enable the proper creation of a blendable motion capture repository [Lead by Motek][M2–M5]
    - T1.3. Dance and ICT-based Learning Workshop [Lead by Athena][M3-M6]
    - T2.3. Capture [Lead by Motek][M4–M7]
    - T1.6. Definition of High Level Features Required for the scenarios [Lead by Athena][M3-M9]
   - T1.4.1 Needs Analysis [Lead by Athena][M6-M12]

- To be completed not later than M36

    - T3.1.1 - Development of semantic representation models [Lead by Athena][M4-M16]
    - T1.7. User Profiling and Modelling for the Personalized Learning Scenarios Lead by Athena][M10-M16]
    - T3.1.2. Development of emotion representation models [Lead by Athena][M7-M18]
    - T6.2. Development of overlay of intersection detection and feedback (visual, auditory and other) between real and virtual dancers [Lead by Motek][M27–M32]
    - T6.4. Technical validation of the developed display and intersection models [Lead by Motek][M34-M35]
    - T8.5 Seminars, Workshops, Concertation Activities with Other ICT Funded Projects, and Community Liaison and Feedback [Lead by Lynkeus][M1-M36]
    - T9.5. Meetings and Communications Management [Lead by Lynkeus][M1-36]
    - T7.1 Usability and Learner's Experience Evaluation [Lead by Athena][M7-M36]
    - T7.2. Evaluation of Learning process through the interfaces [Lead by Coventry][M7-M36]
    - T7.3 Personalization Evaluation [Lead by Athena][M7-M36]
    - T8.4 Dissemination events [Lead by Lynkeus][M12-M36]

STOCOS' presented the project NEURAL NARRATIVES

- "Neural Narratives" experiments with Interactive simulation-based approaches that allow a dancer to alter and extend his or her bodily presence and movement possibilities.

K.Danse presented the Project GAME PLAY

- "Game Play" is a Contemporary Dance Performance in which a dancer is confronted with a visual and sonic semi-autonomous environment sensitive to her/his presence.
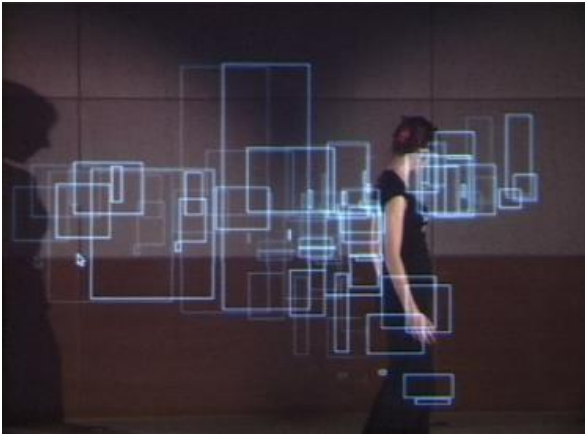
Open issues and action item

Open Issues/Requests	Proposed By	Partners Involved	Action Items	Deadline set
A detailed capture session schedule is needed.	Stocos, K. Danse, LCGW	All	The partners agreed to begin the capturing at the beginning of April and set a Deadline to schedule in details the Capturing Session in the different locations	1st March
A number of important projects done outside Europe have to be taken into account for the State of the Art Survey	K.Danse	Athena, K.Danse	The partners agreed that it is needed to look at the projects outside Europe and exchanging information to complete the SoTA survey. Partners agreed to set a deadline before the completion of the dedicated task.	1st April

The possibility of the user to change the parameters and comparable movements with a social Game can be important features that should be included in the learning Tools that will be developed.	K.Danse	All	The partners agreed that the proposed features are all important and that they have to be taken into account for the development of the learning tools.	
It is important to include the music during the Capturing Sessions because some dance genres are strictly connected with music.	Stocos, K.Danse, LCGW	All	The partners agreed to include the music during the capturing sessions	

Dissemination opportunities and Network/Community Building

Dissemination opportunity	Proposed by	Location	Time of the conference	Deadline for submission of material
Digital Echoes	Covuni	Coventry University	4th March 2016	22nd January 2016 (Coventry will present an overview of the project at the event)
Call for abstract for the Special issue of Computational Culture, a Journal of Software Studies	Athena RC			17th April (Deadline for the submission of abstracts)
International Dance Day	Lynkeus	Accademia Nazionale di Danza (Rome)	27th April 15.30 – 17 CET	29th February to communicate interest in participating to Lynkeus
5th EyesWeb Week	UniGe	University of Genova	6th – 10th June	
Workshop Proposal: MOCO'16, 3rd International Workshop on Movement and Computing	Athena RC	Thessaloniki-Greece	5th- 6th July 2016	1st March
Europeana Space final conference	Covuni	Berlin	November 2016	
Roma Europa Festival	Stocos	Rome	Sept-Dec 2016	
International Dance and Somatic Practices Conference	Covuni	Coventry University	2017	

Projects and tools presented during the meeting that are relevant to the project

Name of the project/Tool	Description of the Tool /Project	Aspects/features that can be of use for project	Action Items
CHESS project Yannis Yoannidis (Athena RC)	Chess is EU-funded project that has been used to author several types of experiences such as QR-based audio guides and rich visual material for story-based art tours with high level of personalization	The story based educational tool can be implemented for the development of the user interface and learning tools within the project.	All partners agreed on implementing the mentioned aspect of CHESS for the use of the project.
EyesWeb Gualtiero Volpe (UniGE)	EyesWeb is an open platform to support the design and development of real-time multimodal systems and interfaces.	EyesWeb can be used for to support the multi-modal system that will be created within the project or be integrated in other platforms developed by Motek.	During the technical meeting will be decided if the platform will be used entirely or integrated in other existing platforms developed by MOTEK.
MocApp & MocApp II Ruth Gibson (COVUNI)	Allows the user to view and sequence motion capture data in the /htr format. It builds a simple stick figure from the joint structure of the take. Developed from captures of Skinner Releasing Technique trained dancers.	Motion Capture knowledge particularly for SRT and the potential challenges of capturing stillness, floor work and dance generated through metaphor and imagery.	Partners showed interest in the tool and will be developed within the project.
3 Visualization Options Oshri Even Zohar (MOTEK) 1. **True 3D holographic volume display** 2. **Smoke – fog volumetric screens** 3. **Pepper's ghost** 4. **VR**	Four different technologies for the hologram creation and visualization with different level of complexity and innovation. The True 3D holographic volume display is still in the testing phase and will be fully developed in the near future.	One of the four options of the hologram creation and visualization will be employed in the project.	Partners showed interested in the tools in particular on the True 3D tool and will wait for the testing and development to see if this is useable or any of the other three valuable tools will be employed

HBM (Human Body Model) Oshri Even Zohar (MOTEK)	A model of the complete human body visualizing muscle forces in real time. Could replace EMG in future. Was shown as a demonstration of an Enveloping meaningful avatar	Such types of avatars can be used for the motion capture and body visualization tool of the project.	Partners showed interested in the model and are interested to see the further development of it to see if this could be of use for the project in the near future.
UNICA Oshri Even Zohar (MOTEK)	A patented motion capture data blending engine and interface created by MOTEK for its custom libraries and production work	Elements of this tool will be available for the Project.	In depth demonstrations will be carried out in separate skype sessions with the technical and dance partners
ASTE (Adaptive Storytelling Engine) (ATHENA)	It is a storytelling engine based on a branching points model for describing the scenarios and allows the system to adapt, in real-time, to the user's profile as the scenario unfolds.	Create the system learning tools that will offer the personalized & adaptive experience.	All partners agreed on implementing the mentioned aspect and integrate it also with the functionalities developed in CHESS for the use of the project.
Peachnote Functionalities and Tools: Vladimir Viro (Peachnote) • **Sheet Music Search Engine** • **Data Encoding** • **Music Similarity Browser** • **Connecting Video and Scores**	Peachnote is a project used for analysing and confronting musical data for different sources, cleaning the noisy data for better results and connecting it with videos and visualizations tools.	The Peachnote functionalities can be developed within the project and extended to incorporate the dance/movement data that will be collected.	Partners showed interest in the use of the tool and agreed on the feasibility of the implementation process due to a similarity between movement and musical parameters.

MIR Tools Applied to Emotional Content Analysis Augusto Sarti (PoliMI)	It is a program that recognise Emotional Content of Music based on a wide set of parameters. It is possible to run query within the database in natural language	Will be developed in the task 3.1.2. of WP3	Partners showed interested in the model and are interested to developing it within WP3.
Neural Narratives Pablo Palacio, Muriel Romero, Daniel Bisig. (STOCOS) • **Modelling of virtual body structures software.** • **Sound synthesis and real time sonification software.** • **Visualization software.**	A performance and custom developed software tools based on simulation-based techniques to extend and alter a dancer's bodily characteristics and movement capabilities.	The performance art dissemination output of the project can be of use for the dissemination events. These software tools may be integrated in the WholoDance platform	Partners showed interest in the performance and agreed that could be used in future dissemination events
Game Play Jean- Marc Matos (K. Danse)	A Contemporary Dance Performance in which a dancer is confronted with a visual and sonic semi-autonomous environment sensitive to her/his presence.	The performance and its possible extensions and developments can be of use for the dissemination events. Other creative projects and performances can be imagined for the purpose of future dissemination.	Partners showed interest in the performance and agreed that could be used in future dissemination events
EU H2020 ICT DANCE http://dance.dibris.unige.it UNIGE is coordinator, partners are University of Maastricht and KTH	DANCE is an EU funded project focusing on the analysis of qualities of dance and their translation into the auditory domain. It is focusing on both blind and non-blind users. Started 1 Jan 2015. Duration 3 years.	The EyesWeb libraries for analysis of movement qualities and the conceptual framework of DANCE may be useful for Wholodance.	UNIGE discussed possibilities of clustering between DANCE and Wholodance. To this aim, a number of submissions from DANCE will be done by DANCE partners to the MOCO Workshop, site of next Wholodance project meeting.

Additional information

Attendees

Members of the consortium who attended:

Partner	Attendee(s)
Lynkeus - Coordinator	Edwin Morley-Fletcher
	Mirko De Maldé
	Ludovica Durst
	Stefano Di Pietro
	Adele Testa
	Antonella Trezzani
Athena RC	Yannis Yoannidis
	Katerina El Raheb
Motek Entertainment	Oshri Even Zohar
	Thijs Bayens
Politecnico di Milano	Augusto Sarti
	Fabio Antonacci
	Massimiliano Zanoni
University of Genova	Antonio Camurri
	Gualtiero Volpe
Peachnote GmbH	Vladimir Viro
Coventry Unibersity	Sarah Whatley
	Ruth Gibson
Instituto STOCOS	Pablo Palacio
	Muriel Romero
K. Danse	Jean- Marc Matos
Lyceum Club for Greek Women	Amalia Markatzi

Agenda of the meeting

WHOLODANCE

Whole-Body Interaction Learning for Dance Education

KICK-OFF MEETING

Draft AGENDA

January 18-19th, 2016

Lynkeus Srl - Via Livenza, 6

Rome

Main objectives of the meeting

- To gather all partners together in one place
- To provide an overview of the work that needs to be undertaken in every disease area
- To clarify the technical aspects of the project
- To determine key priorities for the 1st year of the project
- To set the action plan for the next six months period

| Monday, January 18th		
Morning Session		
Time	**Object**	**Speaker**
12.30 – 13.00	**Meeting at the venue and welcome coffee**	
13.00 - 14.00	**Welcome Buffet Lunch**	
Afternoon session		
14.00-14.05	Welcome Address	Edwin Morley-Fletcher
14.05-14.15	Partner Introductions	ALL
14.15- 14.30	Wholodance : Project Presentation and Activity Scheduling regarding the kick-off-meeting	Edwin Morley-Fletcher
14.30- 16.00	Wholodance: conceptual explanation of the project and operational steps for the achievement of project's goals • General overview • Overall objectives • Tools and operational goals • Main issues/challenges	ALL
16.00 -16.30	**Coffee Break**	
16.30-18.00	State-of-the-art demo of dance tools and explaining video • General overview • Presentation and Demonstration of dance tools' functionalities • Examples through video and recordings	WP leaders
18.00- 18.10	Advisory Committees: appointment of members	Lynkeus
18.10-18.20	Plan of dissemination for the first year	Lynkeus
18.20-18.30	Project Communication Infrastructure, Web-site and Documents Repository Presentation	Lynkeus

Project Dinner (20.00)

Tuesday, January 19th		
8.30-13.40	**Brain storming: methodology and implementation**	
8.30- 9.10	**WP1 - Learning Models and Technical Requirements** • Users' needs elicitation – methods • Learning objectives – preliminary use cases and learning scenarios • Technical requirements Personalized scenarios for learning	**Athena** Dance Schools Covuni
9.10-9.50	**WP2 - Multimodal Sensing and Capturing Analysis** • Recruitment protocol • Motion Capture Technology - Motion capture pipeline and capturing • Collection of ground-truth data and data post-processing • Avatar construction and skeleton fitting • Visualization	**Motek** Unige Covuni
9.50-10.30	**WP3 - Semantic and Emotional Representation Models** • Semantic representation models • Emotion representation models • Joint music-dance representation models • Multimodal signal modelling • Multimodal analysis methodologies • Development of libraries	**Athena** Polimi Unige Covuni
10.30-11.00	**Coffee break**	
11.00-11.40	**WP4 - Automated Analysis of Multimodal Features and Similarity Search** • Similarity search, live-indexing and clustering methods • Layered middleware for application scenarios	**Peachnote** Polimi Unige
11.40-12.20	**WP5 - Data Integration & Data Analytics** • Building and deployment of data management platform + visual • Data annotation and modelling • Integration and interoperability issues • Testing and validation: means and methods	**Athena** Unige Polimi Peachnote
12.20-13.00	**WP6 - Multimodal Rendering, Holographic / volumetric displays Development, and Whole Body Interaction Interfaces** • Solutions for immersive holographic displays • Development of overlay of intersection detection and feedback • Development of the Adaptivity & Personalization System • Technical validation	**MOTEK**
13.00-13.40	**WP7 Evaluation and Validation of ICT-based Learning** • Usability and Learner's Experience Evaluation • Evaluation of Learning process through the interfaces • Personalization Evaluation	**COVUNI** **Dance Schools**
13.40- 14.30	**Lunch Break**	
14.30-15.30	Continuation of the brainstorming	ALL
15.30-16.00	Action plan for the first six months	Lynkeus
16.00-16.15	Any other businesses	ALL
16.15	**Wrap up and End of the meeting**	

Practicalities

The meeting will take place at Lynkeus' premises, Via Livenza, 6 – Rome, II floor, Apt. 5.
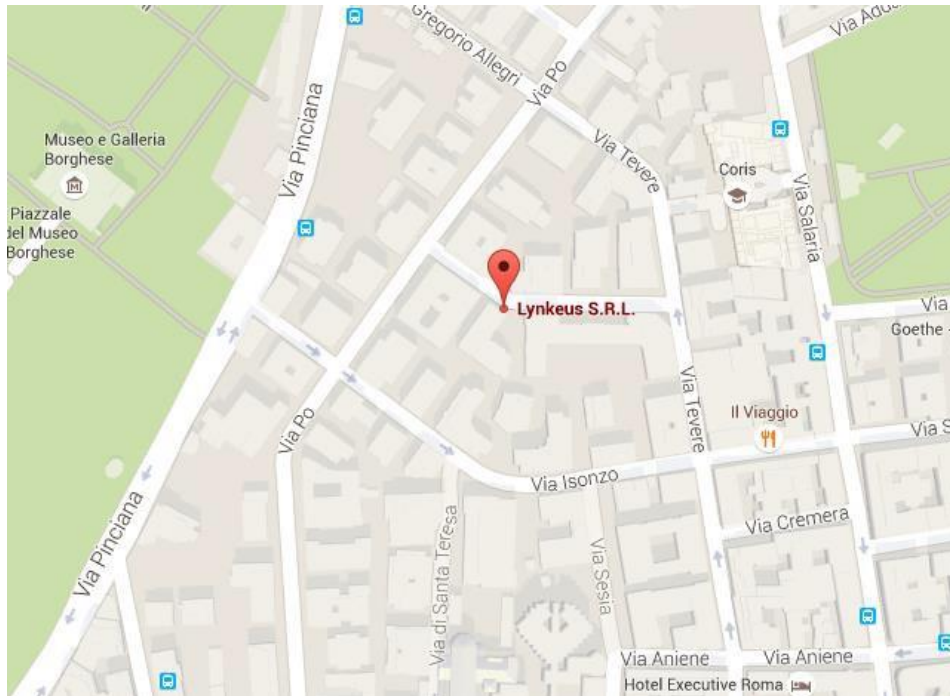
How to reach the meeting venue

From the airport to the Termini railway station you can either take a train to the Termini Railway or take a Taxi directly to the venue of the meeting.

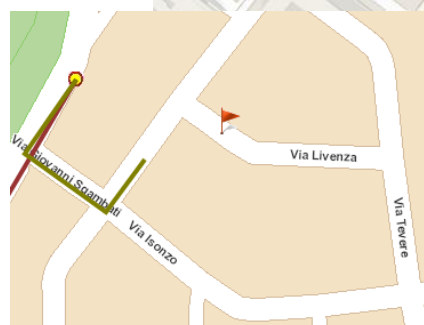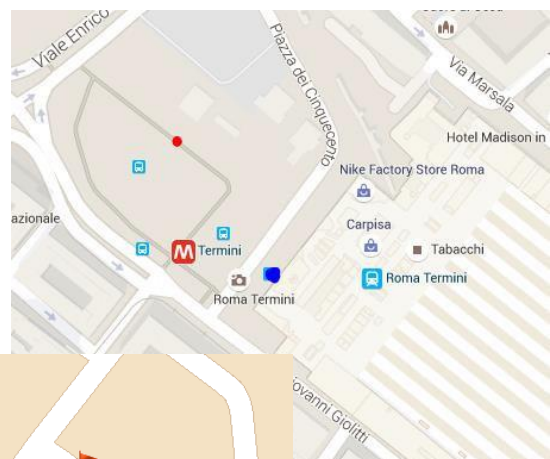**From the Termini Railway you can either take a bus (red dot on the map) or a taxi (blue dot on the map):**

Bus option:

 Take line 910 (MANCINI) for 5 stops Get off at PINCIANA/MUSEO BORGHESE

 Walk for 200m

Taxi option

Taxis are usually available at the exit of the train station and of the airport.

Suggested hotels close to the Venue

- Parco dei Principi Grand Hotel & SPA - Via Gerolamo Frescobaldi, 5 – Tel. +39 06 854421 – **4.5***

- Hotel Victoria – Via Campania, 41 – Tel. +39 06 423701 – **4.5***

- Hotel NH Collection Roma Vittorio Veneto - Corso d'Italia, 1 – Tel. +39 06 84951 – **4***

- MF Hotel Roma - Via Savoia, 44 – Tel. +39 06 8535 7656 – **4***

- Hotel Romanico Palace - Via Boncompagni, 37 – Tel. +39 06 203 9241 – **4***

- Hotel Executive Roma - Via Aniene, 3 – Tel. +39 06 853 7669 – **3***